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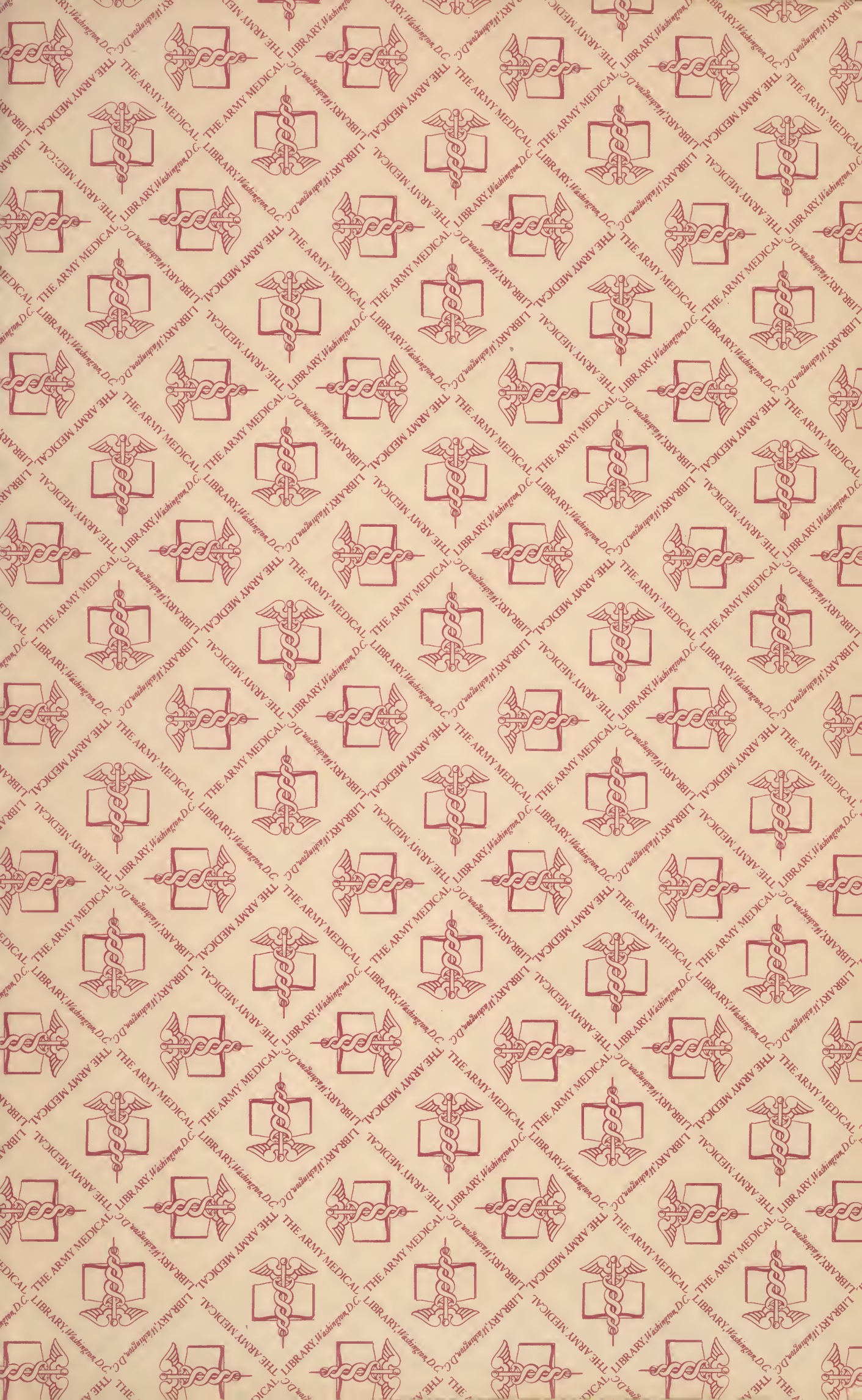
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HEALTH IN AXIS EUROPE

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SUMMARY

1. Health conditions in German Europe have deteriorated in consequence of such wartime conditions as internal migrations and other population movements, physical and mental strain, overwork, air-raid hazards and deterioration of nutritional standards. Medical personnel and facilities available for the civilian population have shrunk in quantity and quality.

2. Systematic examinations of German employees, carried out on a large scale by the Labor Front, have indicated that at least one-third of the examined "healthy" workers showed defects which at that time required medical attention. Working hours were reduced in the summer of 1943. Attempts are made at shortening the time required for the medical care of workers. New technologies have brought new industrial hazards and exposed the workers to undue strain.

3. With reference to specific diseases, there is little evidence of a spread of venereal diseases in Germany. The legal measures designed to prevent such a spread have been further intensified during the war. Typhoid fever incidence has risen four-fold in Germany during the war even after allowance is made for the increase in population. Paratyphoid fever incidence has increased by nearly one-half. Dysentery has increased at an irregular rate; the case fatality rate of this disease has tripled. In the medical press much is made of the increase in stomach troubles and stomach and duodenal ulcers. There seems to have occurred a decrease of duodenal ulcers relative to stomach ulcers.

4. The incidence of malaria has become more severe not only in malarial countries but also in Germany. Estimates of the number of malarial persons in Greece vary between 1,500,000 and 2,500,000.

5. Typhus has spread in Europe and though it is held under control at present, further deterioration of the standards of hygiene may be dangerous. During the first months of 1943 there has been a considerable increase in the number of cases reported from Bulgaria, Turkey, and Rumania. Mass production of anti-typhus vaccine has apparently not been achieved.

6. The incidence of diphtheria has increased by one-half in Germany from 1939 to 1942. Vaccination continues to be voluntary. Scarlet fever incidence increased by some 100 percent in Germany from 1939 to 1942; protective vaccinations are applied only hesitantly and with doubtful success.

7. Much is made of jaundice in intercepted letters and newspaper reports from the continent.

8. The reported incidence of trachoma has increased ten-fold in the expanding territory of the Reich.

9. Apart from Turkey, there has been no spread of smallpox in Europe. Vaccination is compulsory in many countries.

10. Statements of German medical authorities indicate awareness of the impact of war conditions on the incidence of tuberculosis. In the expanding territory of Germany, the incidence of tuberculosis of lungs and larynx has increased by 40 percent; the incidence of tuberculosis of the skin has declined, and that of tuberculosis of other organs has increased by 100 percent. Much progress has been made in the detection of tuberculosis.

11. Germany seems to be well equipped with all vitamins except Vitamin A. There are organized campaigns for the distribution of vitamin preparations.

12. Famine oedema has been reported from Belgium and Greece but not from Germany, where it was observed during the First World War.

13. German medical journals contain articles on fatigue to a striking extent. Present discussions resemble closely the description of phenomena observed during the First World War.

14. Meat from tubercular cattle is consumed in increasing proportions; the control of diseased cattle has been further relaxed.

15. In view of increased requirements, it is of special importance to note the decline in the quantity and quality of medical personnel and facilities. In 1938, there was one doctor available for every 1,400 people in Germany. Now one doctor must care for a number estimated between 2,400 and 3,100. Doctors are overworked, and criteria in assessing health have been lowered. Medical services have become collectivized. Many newly admitted physicians are not properly qualified. Hospital facilities for civilians are scarce as a result of the requirements of the military. Recreational travel is restricted.

16. In view of the size of the German and French production of drugs, the drug situation is not extremely serious in Europe apart from certain specialties. Insulin is scarce and so are liver preparations, the production of which depends upon the importation of animal products. Quinine has been replaced by atabrine. It has been possible to expand the European production of morphine as a result of the increased utilization of poppy straw.

17. Soap is in short supply and of poor quality. Synthetic fats have apparently not been used in soap production to an appreciable extent.

HEALTH IN AXIS EUROPE

I. INTRODUCTION: GENERAL CONDITIONS AND INDUSTRIAL HAZARDS

A. Plan of the Work

The data in the following pages are chiefly from enemy sources. It is believed that information which depicts conditions unfavorable to the enemy is more valuable and carries more conviction if it originates from the enemy himself.[1]

The present introductory part consists of a general survey of such subjects as health conditions among industrial workers, consequent absenteeism, and wartime industrial hazards and accidents. Direct evidence pertaining to these conditions and their impact upon industrial productivity is not readily available. It has thus been necessary to collect material bearing on the general and specific incidence of disease and the facilities and personnel available to cope with it.

It is proposed, in the next section, to deal with the demand for medical facilities and personnel. Owing to a number of factors, which include internal migrations and other population movements, physical and mental strain, overwork, air-raid hazards and deterioration of nutritional standards, this demand has greatly increased in wartime. The final section shows how the demand for medical facilities is met by a supply which, for the same reasons, has shrunk in quantity and quality.

Though the area covered in the report is the European continent, main emphasis has been placed upon conditions in Germany.

B. Health Conditions in Industry

1. General Conditions. Systematic examinations of employees which have been carried out on a large scale by the German Labor Front have indicated that at least one-third of the examined "healthy" workers showed defects which at that time required medical treatment and attention. Tooth defects have the first place while foot defects follow. Every year about 100,000 workers become prematurely disabled at an average age of 54 years, i.e. 12 years before they are eligible for old age insurance. There are 2,000,000 such persons in Germany.[2]

A large proportion of the labor force is women. In 1942, 47 percent of all mothers were reported to have been in employment. Figures for 1939 indicate that 40 percent of

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1 Figures and data for which no specific source is indicated in the report are taken from the various official publications of the health offices and census bureaus of the various countries.

2 Herbert Pirker, "Leistungsmedizinisches Denken in der ärztlichen Praxis," Wiener klinische Wochenschrift, 14 August 1942, pp. 641 ff.

the total female population was then gainfully employed. "Women in industry," it is said, "have now become a semi-permanent institution.... Every woman, married or unmarried, has a vocation.... Marriage and birth result only in a temporary intermission of working conditions which are always dominated by the labor requirements of the management. The latter does everything to reduce the interruption to the shortest possible time. Only such time as is essential for the health of mother and child is granted. Such conditions shorten the time of nursing and result in numerous maladies of the woman. Let us think only of the railroad and bus trips and their effect upon a pregnant woman.... She views work and motherhood as competitors, one of which must be the loser.... The figures justify the assumption that the employment of women impedes the increase in the number of children.... With respect to men, the separation of work and private life is largely a matter of course; with respect to women, especially when they become older and attain greater maturity, such conditions often produce the effects of an inner disruption.... A permanent effort beyond normal limits is like the consumption of capital and reduces efficiency."[1]

A general reduction of working hours was introduced in Germany in the summer of 1943.[2] This was preceed by discussions of the adverse effects of unduly long hours on production.[3] The general registration for work duty,[4] which was extended early in 1943, necessarily produces a lowering of the average stamina of workers. Employees drafted for work under the new regulations come from the ranks of the "normal consumers" who did not receive supplementary rations. Among them are bound to be many disabled and weak persons, since the new registration embraces all men from 16 to 65 and all women from 17 to 45 unless they are working 48 hours a week.

With reference to absenteeism, it is reported that absences because of sickness have increased so rapidly that a new rule was made in February 1943, specifying that doctors' certificates for absence from work could no longer be signed by private physicians. In the future they would have to carry the signature of a factory or state physician. This had been preceded by decrees issued in the spring of 1942 which threatened workers in case of unjustifiable absenteeism with the forfeiture of their accumulated rights to social insurance benefits and gave employers the right to withdraw supplementary ration books from workers with bad attendance records. In the same line are decrees of 1942 which make the exchange of information about the workers' health mandatory

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1 Lampert, "Frauenarbeit und Muttertun," Wiener klinische Wochenschrift, 10 July 1942, pp. 541 ff.

2 OSS source, 18 May 1943.

3 Frankfurter Zeitung, 1-2 May; 7 May 1943. Vera Franke, "Inside Germany Today," New Republic 108:852 ff (28 June 1943).

4 Decree of 27 January 1943. Frankfurter Zeitung, 29 January; 23 February 1943; Der deutsche Volkswirt, 26 February 1943.

upon the work-doctors (in the factory)[1] and the doctors appointed by the sick funds and insurance organizations. Moreover, the conclusion of an agreement was reported in December 1942 between the organization of the sick-funds physicians and the workers' health authorities. According to this agreement the doctors of the sick funds will hold consulting hours in factories and workers be enabled to obtain medical care with minimization of loss of working hours and output.[2] It is pointed out in the German press that a regular consultation of a doctor at his office requires at least 3½ hours, including waiting, commuting, washing and changing clothing, while consultation in the factory takes only half an hour.[3]

In 1942 some firms had started the policy of granting so-called health bonuses for workers with good attendance records. This policy was officially discouraged. The reasons which were stated in a circular of the Minister of Labor were as follows[4]:

1. Such bonuses require consent of the wage authorities.

2. Every employee has the duty not to be absent without good reason and this duty exists without regard to any bonus.

3. It is unjust to bestow favors upon healthy people and to discriminate against sick people.

4. If a bonus is granted, sick people may be induced to postpone the sick report.

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1 The institution of the factory doctor is more fully dealt with in Section III, A, 2, below, on Conditions of Medical Practice.

2 OSS #37520, 27 May 1943. DNB, 18 December 1942.

3 Angriff, 29 January 1943.

4 Reichsarbeitsblatt, 1942, Part V, Number 2, pp. 45 ff.

In the German press, the average number of people who are absent from work because of sickness is reported as 3 percent.[1]

2. Industrial Accidents and Hazards. No recent figures of industrial accidents are available. For well-known reasons they must be high. The last report is of 1938 and gives the number of accidents and industrial diseases as 2,014,315. There was thus a daily average of 5,519 work accidents. New processes and the substitution of materials in short supply have undoubtedly caused an increase in this figure. As early as 1939 the President of the Reich Health Office pointed out that the Four-Year Plan had greatly increased industrial hazards: "In the newly constructed cellulose-wool factories, cases of injury to workers incurred during the washing process with hydrogen sulphide have increased to a disturbing extent. The extraordinary increase in the use of light metals has given rise to a new problem in industrial hygiene in the form of what is called duraluminum sickness, a result of the deleterious effect of metal splinters on the tissues. The increased use of benzolated rubber solutions in newly created industries has resulted in frequent cases of benzol poisoning. New methods of combating grain parasites in large storage systems have resulted in cases of poisoning. The manufacture of artificial resinous substances and of so-called aurite glue led to cases of skin disease. The lead and bronze alloy used as moulds for combustion engines has created a new source of industrial poisoning."

The President of the Reich Health Office then continues (in 1939): "The tremendous expansion in the volume of production, impressively mirrored in production and employment statistics, has created, in the fields of economics and of the care and systematic integration of our human labor power, new and difficult problems; these

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1 Deutsche Allgemeine Zeitung, 11 June 1943. - The private health insurance companies paid the insured the following percentages of the premiums in the indicated years: 74 percent in 1939; 68.5 percent in 1940; 72.3 percent in 1941. - The following conditions are reported from an individual plant, a food enterprise with 200 employees. It should be emphasized, however, that three-fifths of the employees were women, that only a few were under 30 years, and the largest part between 40 and 50 years. Of these employees:

22.5 percent had heart trouble of one sort or another,
25.5 percent had had an operation in the past (cases less serious than appendicitis were not included),
5.5 percent suffered from exophthalmic goiter,
10.5 percent had a light hyperthyreosis,
27.5 percent suffered from rheumatism,
8.5 percent had had a tonsillectomy,
13 percent had chronic tonsillitis,
17.5 percent had extremely defective teeth,
16 percent had chronic bronchitis and emphysema,
6.5 percent suffered from tuberculosis,
0.5 percent had extensive broncho-ekstasias.

Among the women nutritional conditions were found to be better than among the men. Of 146 women, 90 were well fed while 56 were partly in fair, partly in reduced conditions of nutrition. The corresponding figures for 54 men were 33 and 21, respectively. W. Henning, "Auswertung von Reihenuntersuchungen im Betrieb," Wiener klinische Wochenschrift, 14 August 1942, pp. 658 ff.

have now reached such a point that they can no longer be solved without a diminution in the performance of the individual worker and the investment of the last reserves of labor power. The increased labor schedule is characterized by the emergence of inadequate performance.... The extensive introduction of working shifts and the loosening up of the system of safeguarding labor hours, through overtime and Sunday work in many enterprises of State importance, are gradually creating conditions prejudicial to the health of the workers. This result of overwork also leads, in the opinion of medical circles, to a diminution of working capacity, and we are approaching the time when the increase of working capacity and the expansion of production will become the cry of the hour and the directive for further systematic development. We already hear from the medical profession expressions of concern regarding the decline in health conditions, and the frequent occurrence of general nervous disturbances or of disorders of the digestive system, which are ascribed to the handling of new material. They raise the question whether the demands being made on the human working capacity have not in some cases exceeded the permissible limit." Thus spoke the President of the Reich Health Institute in the spring of 1939.[1]

More recent information is indicative of many industrial hazards caused by poisoning.[2] Carbon monoxide poisoning is said to be most frequent, while illness from the effects of motor spirit, motor-exhaust fumes, etc., takes second place. Fire-extinguisher and refrigerator plants expose the workers to carbon-tetrachloride and methyl-bromide poisoning. In the production of explosives carbon monoxide and organic solvents are used. De-lousing institutions have become numerous and the workers operating in such organizations are exposed to special risks. A broadcast of June 1942 referred to the covering-up of the vent-pipes of furnaces in the Ruhr in order to ensure the blackout in the case of air raid alarms: "Unfortunately, the temperature has thereby risen in the works and the workers are also affected by the fumes and the gases which are now prevented from escaping."

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1 Reiter, "Arbeitshygiene und Vierjahresplan," Reichsgesundheitsblatt 14:332 (1939).

2 K. Zipf, "Vergiftungen im Kriege," Deutsche medizinische Wochenschrift, 1 May 1942, p. 472.

II. THE DEMAND FOR MEDICAL PERSONNEL AND FACILITIES MEASURED BY THE INCIDENCE OF DISEASE

In the following section the demand for medical facilities and personnel is indicated by evidence of the prevalence of disease, by types, in Germany and the occupied countries.

A. Epidemiology

1. Venereal Diseases. "Venereal diseases continue to remain a wartime danger and the subject of worry," stated Dr. Leonardo Conti early in 1942.[1] There are only few indications of a spread of venereal disease in Germany. The prewar trend has been downward. The following figures are quoted by German authors:[2]

	1927	1934	1940
New cases of gonorrhea (thousands)	273	175	161
New cases of syphilis (thousands)	75	73	34
Ratio of syphilis to gonorrhea (cases)	1: 3.6	1: 4.1	1: 4.7
New infections with venereal disease per 10,000 persons:			
Men	66.4	a	23.1
Women	23.1	a	12.9

a. Not available

Regional studies indicate primarily an increase in syphilis during wartime; the sulfonamide treatment of gonorrhea is said to have brought about amazing improvements.[3,4]

The Draconian measures designed to prevent the spread of venereal diseases have been further intensified during the war. In the fall of 1940 it was provided that anyone with a venereal disease in the infectious stage who is unable to pay for treatment should receive free treatment at public expense. Other regulations were enacted at the same time. Instead of the law definitely stating that certain houses or blocks of

1 Conti, "Die Bedentung der Wissenschaft, insbesondere der kinderärztlichen, in der Gesundheitsführung," Deutsche medizinische Wochenschrift, 16 January 1942, pp. 57 ff.

2 B. Spiethoff and H. Gottschalk, "The Prevalence of Syphilis in Germany," Medizinische Welt, 1942, pp. 112 ff. Reported in Venereal Disease Information 24:100 ff. (March 1943).

3 A. Rainer-Bielefeld, "Die Bekämpfung der Geschlechtskrankheiten im Kriege im gemischtwirtschaftlichen Bezirk," Der öffentliche Gesundheitsdienst, 1942, No. 1, part B, p.9.

4 In an intercepted letter it is, however, pointed out that treatment of venereal disease is difficult for German civilians since the army gets all the chemicals.

houses in a street could not be used for prostitution, it was provided that the health authority in regard to this law rest with the health department. Any health insurance physician (health insurance is compulsory in Germany) may treat venereal diseases. He has to furnish an initial report, as well as a summary of the case at the end of treatment, to the health department. All persons known to be sexually promiscuous are kept under strictest control and observation. It is suggested that examinations be made once a month or once every three months, depending on the habits of the person under observation, and that observation by private physicians not be permitted if the person changes physicians more than twice a year. Each person who knows, or who under the circumstances should know, that he has a venereal disease must seek treatment and continue treatment without interruption until he is discharged by his physician. If necessary, he is forced to do so by the police. It is the physician's duty to report to the health department all cases lapsing from treatment or refusing treatment for venereal disease. Every person (1) who knows, or who under the circumstances should know, that he has a venereal disease in the infectious stage, yet has sexual intercourse; (2) who deliberately opposes the regulations for the control of venereal diseases according to the law; (3) who makes available substances for self-treatment for venereal diseases, is punished with imprisonment for three years or a fine. Any physician who deliberately sends in an incorrect report to the health authorities in regard to the physical condition of a person or who deliberately permits a venereal disease to be spread is punished with imprisonment from one month to two years. All prostitutes in large cities are compelled to undergo a physical examination by a physician for skin and venereal diseases every seventh day. The physician reports his findings on a certificate for the health department and records the examination in the control book of the prostitute, by means of which the health authority is informed whether the prostitute is being examined regularly. If she fails to do so, compulsory measures are used. One physician who since 1936 continued to issue certificates to the health department and to make entries in the control-books of prostitutes without having made examinations, yet charged the usual fee for his services, was sentenced to eight months imprisonment. His appeal to the Reich court was denied.[1]

In 1942 the regulations were tightened further by the provision that physicians must in every case of infection make investigations as to its source. In the past they had simply been required to file a report with the health department if the patient was liable to endanger others or refused treatment.[2]

As an article in a medical journal points out, the risk connected with salvarsan treatment has increased owing to a number of factors.[3] It is stated that ill effects from

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1 "The Law for the Campaign against Venereal Diseases," Sozialhygiene der Geschlechtskrankheiten, February 1941, as reported in Venereal Disease Information 22:228 (June 1941).

2 Reichsgesundheitsblatt, 30 September 1942, p. 709.

3 Erich Hoffmann-Bonn, "Über Salvarsanschäden im Kriege und ihre Verhütung," Münchener medizinische Wochenschrift, 31 July 1942, pp. 678 ff.

treatment by salvarsan, which had become extremely rare in peace-time and had almost disappeared owing to the exact application of the regulations laid down by the Reich Health Office, have sporadically become more apparent again in recent times. This is said probably to be the consequence of entrusting the treatment to inexperienced doctors, the changed food situation, the increased physical and mental burden, and the excessive strain to which doctors are subjected.

In connection with the lack of evidence of any considerable increase in venereal diseases at the present time, it is well to remember that, contrary to the generally prevailing opinion, experts believe the actual increase in infections during the First World War was slight in Germany (from 20.4 per thousand per year before the war to 20.5 during the war), while, following demobilization of the army after the war, there was a catastrophic increase in the incidence of venereal diseases up to the years 1921-22.[1]

At the present time, news from German-dominated Europe is more alarming than the reports concerning conditions in Germany. A Paris authority is reported to have stated in March 1943, that infections had trebled over the previous three years. Legislation was introduced in France which aims at preventing the spread of the diseases in accordance with the regulations prevailing in Germany.[2] In Norway, which before the war used to have only a few cases of gonorrhea and no syphilis at all, these diseases have now become more widespread owing to the growth of prostitution and other factors.[3] During the first six months of 1942, more cases of syphilis were reported in Oslo than in each of the entire preceding years. Since most cases of syphilis prior to the war were acquired by Norwegian sailors in foreign ports, the situation is even more serious than the figures indicate. The great majority of the Norwegian sailors today sail the Norwegian Merchant Fleet in Allied service under the direction of the Norwegian Government in London.[4]

2. Gastrointestinal Diseases

a. Typhoid and Paratyphoid Fever. There has been a large increase in typhoid and paratyphoid fever in Germany, and a less pronounced increase in Italy. The rise was especially striking in Germany in 1942. The following table indicates conditions in the expanding territory of Germany with respect to typhoid fever from 1936 through 1942:

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1 M. Schubert, "Venereal Diseases in War," Medizinische Welt 14:1037 ff. (October 1940).

2 Transocean, 16 March 1943; Pariser Zeitung, 4 March 1943; Stefani, 2 March 1943; Journal of the American Medical Association 122:451(12 June 1943); 121:1360 (24 April 1943).

3 Journal of the American Medical Association 122:239 (22 May 1943).

4 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C., May 1943, CID 38847, p. 33; also OSS, CID 41102, 27 July 1943.

Year	No. of cases	No. of deaths	Cases per ten thousand inhabitants	Deaths per hundred cases
1936	2,953	333	.44	11
1937	3,081	321	.45	10
1938	2,957	360	.43	12
1939	2,733	353	.39	13
1940	9,163	971	1.0	11
1941	7,723	805	.86	10
1942	16,291	1,622	1.8	10

Typhoid fever incidence per ten thousand inhabitants has thus risen four-fold even though allowance is made for the increase in population and territory. The case-fatality rate has remained stationary. The cases in 1940 included 3,030 in the Old Reich, 1,452 in the Alpine and Danube Gaue and the Sudetenland, 1,462 in the districts of Ciechanov and Katovice, and 2,595 in Danzig-Westpreussen and Wartheland.[1]

The situation with respect to paratyphoid fever is similar. The following table presents figures for this disease in the expanding territory of Germany from 1936 through 1942:

Year	No. of cases	No. of deaths	Cases per ten thousand inhabitants	Deaths per hundred cases
1936	3,136	110	.47	4
1937	3,558	107	.52	3
1938	3,296	205	.48	6
1939	3,072	112	.44	4
1940	4,197	183	.47	4
1941	4,883	156	.54	3
1942	6,076	187	.68	3

The paratyphoid fever incidence per ten thousand inhabitants has thus increased by nearly one-half. Of the 4,883 cases in 1941, 4,047 occurred in the Old Reich and 836 in the newly acquired eastern provinces. The increase in the incidence of both diseases is thus in no way exclusively indicative of conditions in the new areas.

Germans expecting to travel in the occupied sections of Eastern Europe, the Government-General, and foreign countries were advised in the spring of 1942 to obtain protective vaccinations against typhoid and paratyphoid fever before leaving. Vaccines are supplied from the Robert Koch Institute in Berlin or the Behring Works in Marburg.[2] Early in 1943 all residents of the Government-General between the ages of 8 and 55 were made subject to an annual anti-typhoid vaccination.[3]

In this as in other cases of contagious diseases, contact with the population of Eastern Europe has contributed much to

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1 In the Netherlands, deaths from typhoid and paratyphoid fevers increased from 21 during the first ten months of 1940 to 51 in the same period of 1942.

2 Münchener Medizinische Wochenschrift, 15 May 1942, p. 460.

3 Decree of 20 January 1943, Reichsgesundheitsblatt, 1943, p. 163.

the spread in Germany. Over 800,000 Germans from Eastern Europe were resettled elsewhere after 1939. It must be considered that the degree of immunization is higher among these people than it is in Germany proper, and that migratory movements of the magnitude which have occurred in Europe cannot but affect the less immune inhabitants. Among the migrants themselves, the change in environment may have contributed to the outbreak of the disease. In general, the strain of the work, of war conditions, and of malnutrition have lessened the powers of resistance to infection.

The severity of the war has been brought fully home to the Italian people only in recent time; it may be that the figures for Italy are not sufficiently recent to reflect the seriousness of the situation. Cases of typhoid and paratyphoid fever increased as follows:

Year	Number of Cases
1937	36,713
1938	41,824
1939	30,023
1940	30,328
1941	43,011
1941 Jan. to October	30,782
1942 " " "	45,116

In Greece, 289 cases of typhoid were reported to the Ministry of Hygiene in January 1943, and 170 in February. Dr. Papamarkou, Secretary General of the Ministry, has the impression that the number is rather large for the time of the year. The main cause is probably the bad water-supply. The Ministry of Hygiene supplies vaccine gratis to destitute persons.[1] According to recent reports, the occupation authorities have limited the consumption of water in Athens to the period from 6.00 a.m. to 2.00 p.m.[2]

The spread of typhoid in Northern Italy is evidenced by a report in a Swiss newspaper indicating that all the communes in the Canton Ticino along the Swiss-Italian frontier adopted strict precautionary measures against the dangers arising from the typhoid epidemic on the Italian side of the frontier.[3]

In Hungary, the inhabitants of Budapest were ordered to have themselves inoculated against typhoid in November 1942; there were, however, 27 cases of typhoid in Budapest in April 1943, and 11 cases of endemic typhoid fever were brought from the country to the Budapest hospitals during that month. Altogether there were 12,412 cases in 1942.[4]

In Bulgaria, the Plovdiv municipal health service appealed to all citizens, particularly those living in the

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1 From a report by Dr. Elsa Segerdahl Persson entitled "Contagious Diseases in Greece", dated Athens, 28 April 1943. CID 38151.

2 Ephemeris, 17 July 1943.

3 Democrate, 22 January 1943.

4 Reggeli Magyarorzag, 16 November 1942; Poster Lloyd, 7 May 1943; Bern T. (P) #1583, 9 March 1943.

outskirts of the town, to be inoculated against typhoid. Owing to the use of water from uncontrolled sources, the possibility of a typhoid epidemic was said to exist in July 1943.[1]

In Yugoslavian communities orders were given in December 1942, for a re-inoculation of the population.[2] General Mihailovich's chief of Medical Services states that 21,000 cases of typhoid occurred in 1942.[3]

In Rumania, the population of Northern Bucovina and Bessarabia were urged to take precautions against typhoid.[4]

There are similar reports from European regions nearer Germany proper.[5]

German troops are reported to have little trouble with typhoid. It is said that all soldiers are issued pills which will render drinking water safe. Other pills are available which indicate whether the water is too badly infected to be sterilized.[6]

The increased damage to which the territory of Germany proper has been exposed by air raids has led to a deterioration of drinking water and to local scarcities. In Hamburg, the population was urged to boil water before use. There were also free anti-typhoid inoculations.[7] Similar reports have arrived from Berlin.[8]

It is stated that air raids have resulted in scarcity of drinking water and a breakdown in the sanitary system. As a result, many Berliners are said to have become ill from drinking liquids other than tap water.

With respect to vaccinations, it is interesting to note that Professor Sergent, of the North African Pasteur Institute, has observed that the anti-typhoid vaccine used for the French Army during the campaign of 1939-40 did not prove useful in Southern Tunisia. This vaccine had been prepared by the Pasteur Institute of Paris. Professor Sergent holds that the Tunisian bacterium is particular to the country and that only vaccines made by the North African Pasteur Institute should be used in this territory.[9]

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1 Volya, 7 July 1943. BEW (P) 4729, 4 August 1943.

2 Novo Vreme report from Nis; Granicar, 5 December 1942.

3 OSS source, 20 June 1943.

4 Radio Romania, 9 July 1943.

5 Sonderjyden, 23 December 1942. Areler Volkszeitung, 12 September 1942.

6 Intercepted letter from a Swiss doctor. OSS, CID, Censor Materials Summary No. 27, 1 May 1943, p. 28.

7 Bern (P) #5483, 4 September 1943.

8 OSS Source, 2 September 1943.

9 OSS, CID 41395, 6 May 1943.

(25443)

b. Dysentery. Cases of dysentery have increased considerably in Germany, as has the fatality rate of this disease. There has been no increase in Italy.

The following table indicates conditions with respect to dysentery in the expanding territory of Germany from 1936 through 1942:

Year	No. of cases	No. of deaths	Cases per ten thousand inhabitants	Deaths per hundred cases
1936	4,816	152	.75	3
1937	7,545	177	1.7	2
1938	5,265	174	.79	3
1939	6,190	227	.91	4
1940	24,458			
	(12,790)[a]	1,497	2.7	6
1941	10,330			
	(8,641)[a]	672	1.1	7
1942	15,148	1,872	1.7	12

a. Figures in parenthesis refer to the old territory of the Reich.

As conditions deteriorate, a further increase in the incidence of this disease may be anticipated. It is to be remembered that there were no less than 69,000 cases of dysentery in Germany in 1917. As the war has progressed, the disease has become more severe. The fatality rate, which used to be between 2 and 3 per 100 cases, is now 12 per 100 cases.

Cases in Italy were as follows:

Year	Number of Cases
1937	2,004
1938	1,997
1939	1,327
1940	1,725
1941	1,768
1942, Jan.-May	363
1942, " "	885

As the figures for the early part of 1942 indicate, there was a considerable increase during that year.

Intercepted letters indicate several cases of dysentery in Switzerland and Norway.[1] In the summer of 1943, a first epidemic said to be connected with the mobilization of labor was reported from Roesvik in northern Norway. The number of cases was given as 50.[2] This followed an outbreak in Oslo in

1 OSS, CID, Censor Materials Summary No. 27, 1 May 1943, pp. 77 ff., 85 ff.

2 Stock. (P) #2008, 30 June 1943.

1942, where 104 cases of waterborne dysentery were reported in one week.[1] Late in 1942 the outbreak of an epidemic was reported at Rucar in the Muscel district of Rumania, where 200 cases and seven deaths occurred. The number of new cases was said to be decreasing.[2]

c. Diseases of the Stomach. In German medical literature of the last few years much space is devoted to the description and discussion of wartime conditions and their impact upon the diseases of the stomach. As the various writers invariably point out, there has been a universal increase in stomach and duodenal ulcers. A study which covers chiefly employees of the Krupp Works and their families contains the following figures:

	1937-38	1938-39	1939-40
Index numbers of total stomach examinations (1937-38 = 100)	100	143	132
Index numbers of stomach and duodenal ulcers (1937-38 = 100)	100	143	196
Number of duodenal ulcers	266	409	407
Number of scarred alterations of the duodenum	125	179	322
Number of stomach ulcers	58	56	154

These figures indicate a relatively larger increase of stomach ulcers than of duodenal ulcers. Similar observations have been made in the Horst Wessel Hospital in Berlin. While the ratio of duodenal to stomach ulcers used to be 2 to 1 among the patients of this hospital, it was 1 to 1 in October 1942. The share of "all internal diseases" represented by gastritis and duodenal ulcer rose from 6.5 percent before the war to 16.2 percent at that date.

A considerable increase in perforations of ulcers is reported in another study which was prepared by a Viennese physician. In his practice, such cases increased as follows:

Year	Numbers	Percent of all operations
1936	16	1.3
1937	18	1.49
1938	19	1.43
1939	23	1.72
1940	32	2.54

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1 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C., May 1943, p. 30. CID 38847.

2 Universul, 18 November 1942.

During 44 months before the outbreak of the war (1 January 1936 to 1 September 1939) the number of perforations was 64 and they amounted to 1.35 percent of all operations; for 16 months after the outbreak of the war the corresponding figures are 44 and 2.69 percent, respectively.

The medical authorities draw the following conclusions from these trends:[1]

1. In wartime, a larger proportion of perforations of ulcers befalls men who have had no previous complaints.

2. These and similar disturbances are not so much caused by nutritional deficiencies as by the overwork, nervousness, changes in the pattern of living, and tension which war entails. Also important are irregular food habits and long periods during which the stomach is empty.

3. The increase in morbidity observed during the years preceding the war must be attributed in part to the growing burden of work.

4. The reduction of such foods as eggs, milk, and fats seems to have caused the relapse of patients who have suffered from duodenal ulcers before.

5. The decrease of duodenal ulcers relative to stomach ulcers may be due to the reduction of foods stimulating acidity of the stomach, such as coffee, spirits, certain spices, meat, and meat-concentrates.

6. The food situation has caused an increase in ulcers not so much because of the change from fats and animal albumen to carbohydrates as main suppliers of calories, but possibly because of the consumption of dark bread, certain types of cabbage, and certain types of fats. This is especially true of participants in community feeding.

Since the treatment required for these patients is approximately one month, it is pointed out that the considerable increase in "the army of people having a sick stomach" deserved attention not only for general hygienic and medical reasons but because of its impact upon production. It is also said that a large number of patients was in very poor condition and that in many cases the routine and quiet of hospitalization apparently contributed much to their recovery.

It is interesting to note that none of the primary types of diet customarily prescribed in stomach-ulcer therapy in Germany is fully available at present: eggs and butter,

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1 Wilhelm Brühl, "Die Behandlung des Ulcus und der Gastritis im Kriege," Klinische Wochenschrift, 24 October 1942, pp. 951 ff.; Adalbert Slany, "Häufung der Ulkusperforationen seit Kriegsbeginn," Wiener klinische Wochenschrift, 27 February 1942, pp. 171 ff.; H. Rothe, "Zunahme der Magen- und Zwölffingerdarmgeschwüre im Kriege?" Deutsche medizinische Wochenschrift, 25 July 1941, pp. 810 ff.; see also H. Wilhelm, Zentralblatt für Chirurgie, 1941, p. 165;. F.W.Lapp, "Zur diätetischen Behandlung chronischer Durchfallserkrankungen," Deutsche medizinische Wochenschrift, 13 November 1942, p. 1114.

olive oil, and cream are all scarce. Owing to the difficulties of a permanent diet, doctors, it is pointed out, will be inclined to operate more frequently in case of obstinate ulcers than before.

Additional food rations for the sick are preferably granted to those useful in the war effort. A study[1] of 5,000 applications for such rations which were submitted in Berlin during the fourth quarter of 1941, and which do not include applications of tubercular and diabetic persons, indicates that 15.4 percent of them were refused and that 80 percent of the refusals concerned applications of persons over 45 years. In the higher age-groups, there was an absolute and relative increase in the number of refused applications. The proportion of working applicants to non-working applicants was about 2 to 1; authorities regard a ratio of 7 to 1 as more desirable.

Stomach disorders are also increasing in Italy, as indicated by the following figures. They refer to non-specified "diseases of the digestive tract" and are indicative of a considerable increase in morbidity. The figures are as follows:

Year	Number of deaths	Deaths per 100,000 inhabitants
1939	10,778	24.24
1940	12,951	28.86
1941	14,053	30.98

3. Insect-borne Diseases

a. Malaria. Germany is not a malarial country and such increase in morbidity as has occurred may be ascribed largely to the newly acquired Eastern areas. The following table indicates conditions with respect to malaria in the expanding territory of Germany:

Year	Number of cases	Number of deaths	Cases per ten thousand inhabitants	Deaths per hundred cases
1939	282	4	.041	1.4
1940	422	3	.047	.71
1941	1,613	3	.18	.19
1942	716	3	.079	.42

In 1941, morbidity increased four-fold, but there was a considerable decline in the severity of the disease. In 1942, morbidity declined by 50 percent. In the German medical literature it is pointed out that "in spite of the progress attained in preventing malaria, contact with the old foci of malaria in the Mediterranean and Eastern countries has produced as was expected, a certain number of cases. Furthermore, the immigration of foreign workers from malarial countries brought numerous chronically sick people to the Reich... Among the prisoners of war, malaria is not unusual. Finally, the settlement of people from the Black Sea regions, Bessarabia and the Dobrudja introduced sick people into the old territory of the Reich as well as into the localities where they were

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1 W. Gercke, "Betrachtungen zur Kriegskrankenernährung," Deutsches Aerzteblatt, 15 November 1942, pp. 364 ff.

settled."[1] It is also observed that the spread of malaria is not limited to tropical regions, and efforts are made at mosquito control in such central sections of Germany as the province of Brandenburg as well as in the eastern parts (East Upper Silesia).[2]

The principal malarial countries of Europe are Italy, the Balkans, Russia and Poland.

So far as Italy is concerned, a recent report[3] indicates that malaria is prevalent along the entire South coast of Calabria, through Bianca Novo, Branca Leone and Catanzaro, up to Taranto, on a narrow shelf of flat land extending over an area from about 100 yards in width to a mile or so at the deeper deltas of rivers. Right behind the shore are dry, semi-arid hills. Cultivation is carried out in the highly malarious river bottoms. Two insect vectors of malaria breed on the coastal shelf in slightly brackish delta waters. A third mosquito is a stream breeder which prevails throughout the Near East in semi-arid country. It breeds in the gravel edge of running water for some distance up streams and rivers.

The mosquitoes enter houses and tents freely and bite humans. The work of spreading paris green on breeding places in Southern Italy as well as in Sicily was well organized and well carried out by the Italian provincial malaria organizations. These organizations have been trained by the Rockefeller Foundation Malaria Experiment Station under the direction of Professor A. Missirol. Missirol is not a fascist and is able to recruit good workers.

In Lucania malaria is not so well controlled owing to the ground being leveler from Siberi to Taranto. Puglie is much drier and what malaria there is is largely the result of irrigation. Brindisi and Bari are not malarious. Foggia, north of Bari, is the center of a cultivated plain which is malarious toward the coast as far north as Pescara beyond which there is no more malaria.

The Campania is malarious except Naples and its environs. Most malaria is north of Naples, especially around Formia, Terracini and the Pontine marshes. The north half above Formia was under excellent control at least as late as 1940. The same is true of the Roman Campania, which is potentially malarious.

It is believed that members of the Italian armed forces have been diligently cared for during the malarious season in Southern Italy and Sicily, which starts in early July and may last to October. The barracks at Taranto are reported non-malarious.

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1 G. Rose, "Zeitgemässe Behandlung der Malaria durch den praktischen Arzt," Deutsches Aerzteblatt, 1 June 1942, pp. 182 ff.

2 Münchener medizinische Wochenschrift, 12 June 1942, p. 552; Hoffmann-Bielitz, "Der Stand der Malaria in Ostoberschlesien, insbesondere im Kreise Bielitz," Der öffentliche Gesundheitsdienst, 1941, Part A, No. 17, p. 489.

3 Interview with Dr. Louis Hackett, 25 June 1943, OSS #37213.

Treatment for malaria is said to be so well-organized that after 1935 there was very little direct mortality from acute malaria, although there remained a good deal of chronic malaria which was probably a contributing factor in increasing the death rate. Every town had a government doctor who used to dispense free quinine, and in all the mosquito-breeding regions, drainage and the spreading of paris green were undertaken from four to five months each year, beginning in advance of the season each June.

Hospitals worthy of the name are found only in provincial capitals or principal cities such as Reggio Calabria, Cosenza, Potenza, Taranto, Lecci, Bari, Brindisi, Foggia, Catanzaro. The size runs from about 50 beds at Catanzaro to several hundred in Bari. Medical facilities are said to be better than the nursing done in these hospitals.

There are a few sanitoria in southern Italy which in the main have been used for the removal of children from danger areas. They are essentially summer camps with a few cabins and tents. They are situated in the mountains on an upland plateau. As distances are short, such camps could easily be set up for soldiers if need arises. Local doctors generally know how to treat malaria.

The shortage of quinine in Italy and elsewhere, and related issues, are discussed below.

In Greece it is estimated that there are at present some 1,500,000 malarial persons.[1] Another source estimates the number as between 2,000,000 and 2,500,000.[2] Reports indicate that malaria is rampant in Arcadia and that in certain villages all the inhabitants are suffering from the disease. It is suggested that in places where only 25 percent of the population was suffering from malaria in 1942, the proportion may well be 100 percent in 1943. Disease statistics are said to be available only for certain groups of the population, for example, school children in certain districts who undergo examinations. Mortality statistics were available for the whole country until the outbreak of the war. Since 1930 the Ministry of Hygiene and the Malaria Division of the School for Hygiene have systematically combated malaria. The School for Hygiene was founded in 1930 by the Rockefeller Foundation and worked until 1937 under American leadership, and since 1937 under Greek administration with support from Rockefeller funds. The fight against mosquitoes was conducted by the Engineering Division of the School for Hygiene. For the treatment of persons suffering from malaria the Government quinine monopoly made quinine available cheaply or gratis. The campaign against malaria proved to be very successful but because of the shortage of medical supplies, paris green, transportation, etc. it was interrupted by the war. Malaria thus has increased enormously during the last few years. Especially the tropical form, the most dangerous one, has spread

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1 MEW, Progress Report for Enemy Branch for Fortnight Ending 6 March 1943.

2 This and the following information is from a report by Dr. Elsa Segerdahl Persson, entitled "Contagious Diseases in Greece" and dated Athens, 28 April 1943. OSS, CID 38151. For a discussion of the drug situation, see p. 96 of the present report.

rapidly. Macedonia and Epirus were previously particularly bad malaria districts but now the disease has spread to areas where hitherto only a few or no cases at all occurred.

In March 1942, reports from Yugoslavia[1] indicated the outbreak of malaria in the district of Posavina (Bosnia). There were reported to be 150,000 cases.

A rapid increase was reported in Turkey in the spring and summer of 1943.

The Stockholm press reported the following cases in Poland in 1943:

1940	1,949
1941	17,800

Reports concerning malaria are most numerous from Bulgaria. In March 1943, the Minister of the Interior and the Minister of Education announced comprehensive programs concerning the campaign against this disease. Stagnant water was to be drained or disinfected, and a bonus paid for the destruction of mosquitoes.

In general, it has been pointed out by a competent observer that the main danger rests with the possibility of having a new strain of the malaria parasite introduced in regions of countries which are already infected by another strain. The population may have acquired immunity against the local strain but is extremely receptive to any imported parasite.

b. Typhus.[2] The table on the following page, giving the number of cases of typhus fever in various European countries for recent years, indicates the spread of this disease.

Typhus is carried by lice and the spread of the disease is promoted by overcrowding in sleeping places, lack of clean linen and changes of clothing, lack of soap and other facilities for bodily cleanliness. In regions of standing endemic typhus, hunger, excessive hardship, or other debilitating conditions may produce epidemics as well as a greater severity of the disease.

As in 1914-18 and immediately thereafter conditions in Poland were favorable to the spread of the disease as early as 1939. The number of cases reported from December 1939, to June 1940, reached 3,976 in the district of Warsaw, of which

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1 The information for Yugoslavia, Poland, and Bulgaria is from MEW Progress Report of Enemy Branch for Fortnight Ending 6 March 1943. For Bulgaria also Zora, 7, 18 March; 27 May; 20 June; 11 July 1943. For Turkey: OSS source, 7 May 1943.

2 Parts of this section have been reproduced verbatim from Yves Biraud, "The Present Menace of Typhus Fever in Europe and the Means of Combating It," League of Nations, Health Organization, Bulletin 10:1-64 (1943). See also MEW "Typhus in Europe," No. L 186/Z, dated 2 April 1942; a memorandum dated 4 March 1942, Coordinator of Information, #13586.

Table 1. NUMBER OF REPORTED CASES OF TYPHUS FEVER IN EUROPE, BY COUNTRIES, 1939-1943

Country	1939	1940	1941	1942	1943
Germany[a]	2	556	1969	2043	800[b]
Bulgaria	108	155	284	709	1250[d]
Yugoslavia	404	282	c	c	117[e]
Greece	45	43	c	c	c
Turkey	471	533	704	427	2593[d]
Slovakia	c	c	c	c	325[f]
Rumania	942	1403	1827	3992	5585[d]
Hungary	57	97	652	827	658[f]
France	0	1	2	230[g]	2
Portugal	27	c	50	1	5[d]
Spain	62	14	9560	4144	404[d]
Lithuania	153	115	c	c	c

a. Deaths from typhus fever in Germany in the indicated years were: 1938, 0; 1939, 0; 1940, 95; 1941, 326.
b. The figure is for the first seven weeks of the year only.
c. Not available.
d. The figure is for January through May only.
e. The figure is for January through March only.
f. The figure is for January through June only.
g. All cases except one occurred in the unoccupied zone.

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1,746 were in the town proper. During the corresponding half-year of 1939, the number of cases had not exceeded 33 (with a single death):-

In the part of Poland now known as the Government General, cases of typhus rose as follows (according to a German medical writer):[1]

Year	No. of Cases
1936	740
1937	680
1938	700
1939	?
1940	7,900

As this writer points out, the figure for 1940 should be doubled or trebled to take account of the cases which escaped notification.

In the western part of Poland, now called Wartheland, typhus was extremely rare, and only some 40 cases were reported in 1938. This figure rose to 486 in 1940 and to 1,241 in 1941.

In the northern part of the Warsaw Voivodie, which is now annexed to Eastern Prussia to form, with part of the Bialystok Voivodie, the district of Zichenau (Ciechanow), some dozens of cases were reported annually before the war. There were 8 in 1940 and 550 in 1941.

For the rest of Poland, no figures are available.[2] Though conditions are disquieting, the spread of the disease falls far short of the epidemic subsequent to the first World War of 1914-18, when, in the area which now represents the Government General, 44,000 cases were reported in 1919.

Events in eastern Europe have led to an increase in typhus in those regions, where the disease occurs in normal years sporadically in Bulgaria, Greece, and Yugoslavia.

With reference to Greece it is reported that there were 422 cases in Athens-Piraeus during the winter of 1942. Since the disease is greatly feared, it is believed that the cases have been reported relatively completely. One hundred and sixteen cases were reported in Salonica and vicinity during the winter of 1943. Otherwise there have been only isolated cases. The two epidemics mentioned were relatively mild with few deaths.[3]

In Yugoslavia the disease is said to be spread by the partisan troops who have no facilities for changing their

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1 E. Zimmermann, "Zur Epidemiologie des Fleckfiebers im Generealgourvernement," Zeitschrift für Hygiene und Infektionskrankheiten 123:552 ff. (1942).

2 The Polish area annexed by the USSR had the following number of reported cases: 2579 in 1938; 2197 in the first six months of 1939.

3 From a report by Dr. Elsa Segerdahl Persson entitled "Contagious Diseases in Greece" and dated Athens, 28 April 1943, OSS, CID 38151.

clothing and lack any sort of hygienic rules.[1] Captured partisans reportedly state that scores of their fellows are dying daily.[2] It is reported that the occupation authorities may be using the typhus scare to control population movements and combat partisan activities.[3] It is interesting to note that this has also been reported with respect to the occupation authorities in Poland. There they reportedly made use of the typhus scare in order to segregate the Jews and control population movements as a means of preventing the leakage of military information.[4]

Special attention should be paid to the figures for Turkey as indicated in Table 1. The present Turkish epidemic is said to be the worst since 1905.[5]

In Rumania, typhus was extremely rare in Transylvania; it was endemic in Bessarabia and Bukovina, and sporadic in the other provinces. In Transylvania, both in the part occupied by the Rumanians and in that occupied by the Hungarians, typhus spread extensively in 1941. Supplementing the overall figures given in Table 1., a slightly more detailed survey is as follows:

Year	Rumania, 1912 territory (before loss of territory by annexation or invasion)	Rumanian territory on January 1, 1941	Rumanian territory annexed by USSR
1938	2,254	612	1,617
1939	1,014	491	506
1940	1,378	638	734
1941	1,906	1,045	a
1942, 1st qu.	2,149	943	1,070

a. Not available.

In 1942 and 1943 the disease increased rapidly.

Figures for Bulgaria are likewise presented in Table 1. For the localization of the disease, the following data may be of help:

Year	Bulgaria, present territory, including annexations	Bulgaria, 1919 territory, without annexations
1938	91	91
1939	129	129

1 OSS, CID, #35939, 5 June 1943.

2 Novo List, 16 May 1943.

3 OSS, Bern (T.), 30 July 1942, #3515 (P).

4 Ibid.

5 OSS source, 31 May 1943.

Year	Bulgaria, present territory, including annexations	Bulgaria, 1919 territory, without annexations
1940	127	127
1941	302	271
1942, 1st qu.	332	290

As is evidenced in Table 1, the situation has deteriorated in recent months. Reports indicate that the campaign against the disease has been intensified and people are urged to greater cleanliness. If the exhortations are not effective, the authorities will have recourse to forcible de-lousing. In 1943, the incidence of typhus is reported to be double that of last year.[1]

In 1941, and to a greater degree early in 1942, typhus appeared not only in Transylvania and in Sub-Carpathian Ruthenia,[2] where typhus used to be endemo-sporadic, but in sporadic form in several parts of Hungary which had hitherto been free from the disease. The following figures are illustrative:

Year	Hungary, present territory (incl. annexations)	Hungary, former territory (before annexations)	Territory annexed from Czechoslovakia	Territory annexed from Rumania
1938	5	5	17[a]	0
1939	57	34	23	9[a]
1940	93	4	89	3[a]
1941	621	23	226	370
1942 1st qu	377	52	166	158

a. Approximate.

The disease was reported to be rampant in the spring of 1943.[3]

A similar spread of the disease also occurred in Germany during the later months of 1941. Outside those territories taken from Poland where the spread of typhus was particularly marked in 1940-41, no civilian cases of typhus were recorded in Germany in 1939 and only 6 cases were reported in 1940. In 1941 there occurred no less than 395, nearly all of them during the months of November and December. During these two months, typhus occurred in no less than 44 administrative divisions out of the 74 of Greater Germany. The incidence of cases was considerably greater in the east than in the central, western and southern parts of the country. During the first

1 Zora, 13, 14, 16 January; 7, 14 March 1943. Borba, 18 January 1943. Utro, 14 January 1943. Zora, 23 July 1943. Dnes, 16 July 1943.

2 This territory belonged formerly to Czechoslovakia.

3 OSS source, March 1943.

two quarters of 1942, when 459 and 1,273 cases respectively were reported, the distribution was more uniform, foci occurring even in the north-western part of the country.

The cases reported relate exclusively to civilians. In view of the traditional cleanliness of the German civilian population, the widespread and rapid distribution of typhus can be explained only by the existence of active foci of infection, either within the country among the military population, for which figures are not published (German and foreign troops and, in particular, Russian prisoners), or outside in Poland or in the theaters of operation in the USSR.

During active military operations involving the movements and relief of many divisions and the transportation of hundreds of thousands of wounded, prisoners, and civilian workers, it must obviously be difficult to prevent the entry into Germany or Hungary of carriers of lice (and even carriers of the Rickettsia itself) coming from the zone of operations where typhus is endemic.

Reports from Germany emphasize the following factors as responsible for the spread of the disease in Germany and in the East: deterioration and insufficiency of food which lessen the power of resistance; insufficient supply of clothing, which is not conducive to cleanliness and causes individual pieces of clothing to be worn for a long stretch of time; homelessness owing to the destruction of lodgings; greater density of inhabitants per lodging owing to the same cause; lack of soap and disinfectants.

It is interesting to compare German morbidity figures (as presented in Table 1) with figures for the first World War of 1914-18. The total, including military cases, was then as follows:

1914	1,675
1915	49,039
1916	343
1917	355
1918	553
1919	3,894
1920	1,103
1921	533
1922	386
1923	27
1924	8
1925	3

The fact of note in this connection is the relative smallness of the German civilian sector which was then affected by the disease. Not only did this sector largely consist of medical personnel, but other groups were much more prominent, especially prisoners of war. The figures were:

Year	German civilians	Foreign civilians	Military personnel	Prisoners of War
1914	8	2	4	1,661
1915	50	4	519	48,466
1916	22	56	42	223
1917	48	136	89	82
1918	143	131	105	174
1919	1,040	a	a	a

a. Not available.

The figures for the present war, which count civilians only, are thus indicative of a considerably larger number of typhus cases in German territory. The extent of the disease among prisoners of war can be judged from the fact that the number of doctors required for its treatment and prevention made it necessary to recall Jewish physicians, who were no longer allowed to practice their profession, and to send them to the prisoner of war camps to practice.

The distribution of the cases in Germany is reported to show high incidence in industrial areas, a phenomenon which would be indicative of the movement of foreign industrial labor from Eastern Europe to German industrial centers. Ninety-seven percent of the 1942 cases (first 9 months) are said to concern "nicht Volksdeutsche" (racially not Germans). In 1939 and 1940 nine cases occurred among the Germans who had been removed from the East. The mortality of the disease is said to be higher among Germans than among Poles, who have acquired a certain degree of immunization. Among the latter, the mortality is reported with only 5 to 6 percent in 1938-40.

Typhus is endemic not only in Eastern Poland and Bessarabia, the bases from which operations were directed against the USSR, but also in the territories of the Soviet Union itself.[1] Figures for years after 1937 are lacking for that country. Those available for the previous fifty years, however, leave no doubt about the existence of typhus endemicity there. Moreover, the mass exodus of civilians during the Russian retreat, their precarious settlement away from their homes, extensive military movements, and the hardships of the winter campaigns of 1941-42 and 1942-43 are powerful factors tending to aggravate the pre-existing typhus endemic. In areas where active operations take place, the systematic or accidental destruction of houses also plays its part, as it entails the crowding together of the remaining civilians and of the invading armies in the few habitable buildings. The possibilities of the spread of typhus among Germans and Russians in Russia differ greatly. It is, of course, practically impossible to keep either German or Russian troops at the front absolutely free from lice, especially in winter. However, while the chances of the Rickettsia being brought to the Russian troops are doubtless greater, the German troops are practically all receptive to it, whereas some Russian troops may be resistant on account of the immunity acquired in past years.

In western Europe, the epidemic which, as indicated in Table 1, raged in Spain in 1941 and in the beginning of 1942 has now receded. It does not seem to have been due to the importation of the virus from the outside but to a revival of endemo-sporadic typhus which had almost disappeared in the years preceding 1939. This revival must in part be ascribed

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1 During the First World War and in subsequent years typhus cases increased greatly in number in Russia. From an average of 150,000 a year before the war, the number of reported cases rose to 700,000 in 1918, and to 6,600,000 in 1919, at which figure they remained in 1920. In 1921 the number declined to 1,200,000. The actual number of cases during that period is reported as about 25,000,000, i.e. nearly one-quarter of the population for which statistics were available. Other countries with high morbidity during the First World War are Serbia and Rumania.

to the destitution engendered by the Civil War and the severe economic disturbances to which it gave rise.

Repercussions of the food shortage caused a typhus hyperendemic in North Africa which has abated to some extent only. The appearance of typhus in France is clearly due to this increase above the endemic rate. France had for many years been quite free from typhus. The cases reported in recent time occurred in the central and southern part of that country, not only among individuals arriving from North Africa but also among natives from those countries working in France. Apart from special cases, the disease did not spread to the surrounding French population, since most of them were free from lice. The only secondary foci recorded occurred in the prisons of Marseilles, where obviously lice infestation was rife. The number of cases there far exceeded one hundred.

There are sufficient indications of the apprehension with which the spread of typhus in Europe was regarded by the German authorities. In September 1939, the Minister of the Interior issued a circular largely dealing with disinfestation and measures to be taken by doctors for their personal security. No allusion was then made to any sort of prophylaxis by means of vaccination.[1] Early in 1942 Dr. Leonardo Conti, the Reich Health Leader, made a statement to the effect that typhus had been brought into the Reich from the east. The disease had been suppressed at once but the highest degree of attention was still necessary.[2] Germany then ceased publishing statistics on typhus and did not resume until early in 1943. In the meantime considerable effort had been made at preventing the spread of the disease. A centralized integration of all anti-typhus activities was established at Hitler's headquarters under Dr. Karl Brandt, Hitler's representative in matters of public health.[3] New typhus institutes were established in Berlin (Director: Professor Hofmann),[4] Riga (German Hygienic Institute for the Ostland), Kiev, Kherson,[5] Cracow (Typhus Research Institute of the German High Command),[6] and elsewhere. The establishment of a typhus hospital was reported from Leipzig.[7] According to Conti, a sanitary demarkation line was drawn in the Baltic States, over which no one might pass without having been deloused three times.[8] The number of delousing facilities in

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1 Bulletin of Hygiene 16:425 (1941).

2 Wiener klinische Wochenschrift, 20 February 1942, p. 154; Deutsche medizinische Wochenschrift, 24 April 1942, p. 434.

3 OSS source, 24 February 1943.

4 NPD, 1 June 1943.

5 Transocean, 13 June 1943.

6 Coordinator of Information, #13586, 4 March 1942.

7 Reuter, 7 January 1942.

8 Dagens Nyheter, 24 January 1942.

the East[1] was increased greatly and the population was exhorted to make use of mobile hot-air chambers.[2] Leaflets, illustrated advertisements, and exhibitions constantly draw the attention of the population in the east to the dangers of typhus and the methods of meeting it. A moving picture entitled "Fight against Typhus" was prepared and shown in Berlin cinema houses early in 1942. While the people are continually reminded about cleanliness, there is, as is discussed elsewhere in this report, little soap, and hardly any of the special de-lousing ointments which used to be available before. In the summer of 1943, the production of louse-proof underwear was reported from Germany. This is supposed to kill lice and prevent them from penetrating. Whether it will become of great usefulness remains to be seen.[3]

Protective vaccinations against typhus seem thus far have been limited to special groups. These are said to include French prisoners in German camps,[4] the medical personnel attending to typhus hospitals and other facilities, the population of Athens,[5] of French towns,[6] of "about 80 percent of the population of Warsaw,"[7] "all persons between 2 and 80 years in Presov (near Bratislava),"[8] and "160,000 persons in Poland."[9] Medical science has produced a considerable number of anti-typhus vaccines but thus far most of them cannot be made available on a mass production basis which would facilitate the vaccination of large populations. Weigl's[10] vaccine is produced from artificially inoculated lice; one injection (three seem to be required) contains the intestinal contents of 90 to 175 lice. It goes without saying that the production of this vaccine in large numbers is, for all practical purposes, impossible. The Cracow-Lemberg army institute, which seems to be the only German agency producing this vaccine, is said to employ approximately 500 persons, and its output is reportedly sufficient for the

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1 The Swiss established similar facilities at their borders. Letter Extract, OSS, San Francisco Office, 7656, 28 July 1942.

2 In Vilna alone there are said to be 60 de-lousing institutions. Stock T. 9 September 1942, #2450 (P).

3 Frankfurter Zeitung, 28 July 1943.

4 La Depeche Toulouse, 20 April 1943.

5 Donauzeitung, 11 February 1943.

6 OSS, CID Censor Materials Summary 27, 1 May 1943, pp. 58 ff.

7 Krakauer Zeitung, 3 February 1943.

8 Grenzbote, 24 November 1942.

9 H. Hetsch, "Die Schutzimpfung gegeu Flecktyphus und die zu ihr verwendeten Impfstoffe," Medizinische Klinik, 1942, No. 15.

10 Rumor has it that Dr. Weigl, the famous Polish scientist, was executed by the Germans allegedly because he had made his services available to the Russians after the Germans had withdrawn. Upon their return he is said to have been killed.

treatment of 500 persons each month.[1] It is reported that 160,000 persons in Poland were thus vaccinated; they are said to be immune for one to two years.[2] There is also an institute called "Working Union of the German Serum Institutes Ukraine", but it is not known what types of vaccine they produce.[2a]

Cox's method, which is widely used in the United States, requires relatively large amounts of egg-yolks. 60,000 fertile eggs would theoretically be required to provide vaccine for the treatment of 1,000,000 persons. Cox's method was introduced in Germany by Otto, Wohlrab, Gildemeister and Haagen. Gildemeister and Haagen regard Cox's method as more practical than Weigl's but are of the opinion that it can produce only restricted amounts and accordingly cannot supply the material necessary for mass vaccination. It must be remembered that the supply of fertile eggs is subject to seasonal fluctuations, and also that the vaccine is suitable only after some time has been allowed to pass.[3] However, productive facilities have been established in Lemberg under the auspices of the I.G.Farben (Behring Works, Marburg-Lahn) and in Frankfurt-Main by the State Institute for Experimental Therapeutics.[4] It seems that this vaccine was first used primarily for the vaccination of medical and sanitary personnel. Approximately 1,000 of such persons are reported to have been vaccinated in 1939-40 and 30,000 in 1940-42. Only 44 cases of typhus fever are said to have occurred among these people.[5] In more recent times the use of this vaccine seems to have become more comprehensive. Official regulations[6] provide for three inoculations of .5cc., .5cc., and 1.0cc. of the vaccine which are to take place in periods of five days. If the environment is such that the danger of infection continues, the vaccination has to be repeated after one year. The amounts which are then given are .5cc. and 1.0cc. If necessary, a third

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1 Coordinator of Information, #13586, 4 March 1942.

2 H. Hetsch, "Die Schutzimpfung gegen Flecktyphus und die zu ihr verwendeten Impfstoffe," Medizinische Klinik, 1942, No. 15; E. G. Dresel, "Ueber die Epidemiologie des Flecktyphus," Münchener medizinische Wochenschrift, 30 January 1942, p. 113.

2a Europa - Kabel, 6 August 1943.

3 E. Gildemeister and E. Haagen, "Ueber die Züchtung der Rickettsia mooseri und der Rickettsia prowazeki im Dottersack des Hühnereies und über die Herstellung von Kulturimpfstoffen," Zentralblatt für Bakteriologie, I, 148:257 ff. (1942).

4 Zentralblatt für die gesamte Hygiene, April 1943, vol. 51, pp. 68 ff.; Münchener medizinische Wochenschrift, 20 March 1943, p. 276.

5 R. Wohlrab, "Flecktyphusbekämpfung im Generalgouvernement," Münchener medizinische Wochenschrift, 29 May 1942, p. 486.

6 Circular of 4 January 1943. Der öffentliche Gesundheitsdienst, 1943, Part A, No. 7-8, p. 153.

vaccination takes place in the following year. It consists of 1.0 cc. only. The same regulation indicates that vaccine for medical personnel is held in readiness at the Robert Koch Institute in Berlin, and lists as other suppliers the Behring Works of Marburg and the Serum Institute of Anhalt in Dessau. Mention is also made of new producers which will have supplies available probably in the second quarter of 1943. These new producers are the Serum Works of Saxony in Dresden, the Schering A.G. of Berlin, and the Serum Works of Hamburg. This information, contained in a circular of the Minister of the Interior of the Reich of 4 January 1943, seems to indicate a shift from the previously preferred Weigl vaccine to that prepared after Cox's method, which is also the vaccine generally produced in the United States. It seems that the output of Weigl's vaccine has been even more disappointing than was anticipated. Moreover, the output of the Cracow-Lemberg army institute has in no way been reserved for the East, but has been used for the inoculation of German troops elsewhere. The German units in the African theater of war used anti-typhus vaccines of various kinds, including those prepared by the Pasteur Institutes of Paris and Tunis, Weigl's vaccine prepared in Cracow-Lemberg, and vaccine supplied by the Institute for Experimental Therapeutics of Frankfurt.[1] This is an innovation since the general army regulations of 23 April 1942 contain references only to Weigl's vaccine.[2] There were indications of strained supplies of anti-typhus vaccine for the German armed forces in North Africa. Most use seems to have been made of vaccines from the Cracow-Lemberg Institute and from the Pasteur Institute of Tunis.

The vaccine preparations which have been mentioned so far do not consist of Rickettsia. One source reports that Germany continues exclusively to use killed vaccines while another indicates that canned live bacteria are used by the Cracow Institute.[3] In view of the traditional aversion to the use of live bacteria not much credence should be given this information.

Killed vaccine of the Durand-Giroud type is produced from mice lungs. White mice, particularly the so-called Swiss mice, are especially useful in the manufacture of this vaccine. Germany bought huge quantities of these mice from Switzerland in the early part of 1940 and paid for them in Swiss francs, an indication of the importance which Germany attributed to this transaction. Whether the mice were actually used for the production of vaccine of the Durand-Giroud type is not certain, and a British report states that such was not the case.[4] Italy then made offers to the Swiss with the view of obtaining supplies of white mice but exportation was finally forbidden by the Swiss Federal Council. There is a report that Dr. Mooser, the well-known Swiss scientist, produced killed vaccine of the Durand-Giroud type and that the whole output was reserved for the Swiss army and for Poland.[5]

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1 Circular of the Wehrmacht-Sanitätschef beim Oberbefehlshaber Tunesien, dated 12 February 1943. In files of OSS Library..

2 The same applies to the "Fleckfieber-Merkblatt für Sanitatsoffiziere," dated 15 February 1942.

3 Journal of the American Medical Association 121:686 (27 February 1943).

4 OSS source, 2 April 1942.

5 OSS, CID, Censor Materials Summary 27, 1 May 1943.

Elsewhere in Europe the stocks of available vaccines are being used up locally. The institutions producing them are few.[1] Bucharest prepares a vaccine of the Durand-Giroud type for the army. The Pasteur Institute of Paris makes vaccine from rabbits' lungs, probably according to Giroud's latest methods.[2] In September 1942, Germany requested 40 to 80 liters of lung emulsion from the Institute, an amount which would suffice for 12-24,000 vaccinations. One liter of this vaccine, an amount sufficient for about 300 vaccinations, can be obtained from a 4-lb. rabbit. It is interesting to note that this process of production is subject to the same drawback as others, that is, lack of material for mass production. Among German documents captured during the North African campaign there is a circular of a physician attached to an Army, dated 12 February 1943,[3] which states: "Protective vaccination of all soldiers in Tunisia against typhus requires enormous amounts of vaccine. These amounts cannot be supplied from home. It is, therefore, necessary to have recourse to the vaccine of the Pasteur Institute of Paris. The Institute has readily placed at our disposal the available amount of vaccine and will continue to produce it for the armed forces. Apart from this it is entrusted with the supply for the civilian population which likewise must be secured if the disease is to be fought efficiently. The vaccine is produced from killed rickettsia made from the lungs of artificially infected mice or rabbits. The need for these animals is large in view of the number required for the manufacture of vaccine. The war obviates the hinterland as a source of rabbits. Therefore the armed forces themselves must undertake to provide rabbits for the Pasteur Institute. By army orders troops have been strictly forbidden to kill rabbits for food. The medical service will have the function of purchasing rabbits from the civilian population, especially of the farms, and of transporting them to Tunis. The animals ... are to be bought by the medical personnel at the usual prices and sent to Tunis by the fastest route....The enterprise does not aim at producing a supply of rabbits at this time only, but is to be continued....No more than 50 percent of the available rabbits are to be purchased at one place in order to facilitate further breeding...."

Spain makes live vaccine of the Laigret type which is produced from rat brain coated in egg-yolk or from mouse brain. Vaccine of Cox's type is also produced by the Institute for Military Hygiene, Madrid.[4] There have been reports in 1942 that Spain had pressing need for an anti-typhus "serum" and that preparations did not meet the requirements.[5] In 1942, the Spanish branch of an American automobile firm requested the shipment of a supply of Cox's vaccine from the United States.[6] Lack of vaccine was also reported from Hungary.[7]

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1 A shortage of vaccine is reported from Hungary. An institute in Ungvar (Uzhorod) is engaged in the preparation of anti-typhus serum. Deutsche medizinische Wochenschrift, 28 May 1943.

2 Dr. Giroud has returned from Tunis to France.

3 In files of OSS Library.

4 Zentralblatt für die gesamte Hygiene 51:68 ff. (April 1943)

5 OSS, CID, 27473, 27 January 1943.

6 OSS, CID, Censor Materials Summary, No. 27, 1 May 1943, p. 68.

7 OSS source, March 1943.

The serum mentioned in the report from Spain is not used for the purpose of immunization but designed for the treatment of existing cases of typhus. Up to the present time medical science has not been successful in developing a serum which may be injected into patients already affected with typhus. Research is being carried on in many parts of the world. In February 1943, the German medical press reported successful experiments in the treatment of serious typhus cases by blood transfusions from other typhus patients who have passed the crisis and are free from temperature. An evaluation of this report with special reference to the practical usefulness of the new method is not available at present.[1]

In spite of this report, there is much skepticism in Germany concerning the extent to which vaccination proper can be made useful for large populations. A recent article[2] points out that, in spite of what has been done with respect to the production of vaccines, "it is no personal pessimism but an indubitable fact that the goal of producing in sufficient quantity a typhus vaccine for the whole endangered military and civilian population can hardly be attained within a reasonable space of time, certainly not during the war. However, new improvements in technology and the discovery of new methods may increase the quantity of vaccine available."

The extent to which typhus will become a threat to a larger proportion of the population of Western Europe and Germany proper depends largely upon the course which military events take. If infestation with lice is aggravated by such factors as hunger, disorganization of administrative powers, badly organized troop movements, conditions of extreme crowding in lodgings, homelessness and the like, a spread of the disease may be anticipated. A disorganized retreat of the German armies from the east would have a similar effect.

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1 Bern T. (P) #1346, 26 February 1943.

2 Dr. Rose, "Fortschritte in der Bekämpfung der Kleiderlaus," Reichsgesundheitsblatt, 3 February 1943, pp. 53 ff.

4. Infectious Diseases.

a. Common Cold, Influenza, Pneumonia. There are no specific figures to show an increase of these diseases in Europe, but the shortage of fuel is occasionally referred to. Reduction of gas consumption in Germany as ordered in June 1943, reduces the supply of hot water.[1] British prisoners of war complain about the apparent shortage of wood and coal in German camps.[2] Adverse symptoms of exposure to cold, as reported from France and elsewhere are intensified if increased food supplies are not available.[3] The destruction of window panes by recent bombings and the shortage of window glass must also be considered. According to announcements in Germany, the plate and window glass industry had built up large stocks in order to be able to meet any emergency.[4] However, recent announcements of Berlin city authorities state that only bedroom and sitting room windows will be given preference with respect to repair, and sitting room windows will only be repaired if the family uses the room or if it is occupied by air-raid victims. No other windows can be repaired until the panes have been replaced in all these rooms.[5] Other reports indicate that windows in Berlin are covered with paper and cloth.[6] The German glass industry was not fully employed in the first years of the war. Then the demand increased and could be met owing to complete mechanization of plate and window glass production and the additional capacity of the Sudeten plants. Increased manpower requirements of the plate glass industry will make themselves felt in other sectors of the economy.[7]

In Italy a moderate increase in mortality caused by influenza and pneumonia has been observed in recent years. The figures are as follows:

	Number of deaths per 100,000 inhabitants	
Year	Influenza	Pneumonia
1939	18.68	174.60
1940	18.00	176.38
1941	19.71	176.04

There have thus far been no indications of an influenza epidemic as serious as that after the First World War. Authorities are inclined to regard such an epidemic as the greatest possible threat. Not much is known about the origin of this disease the incidence of which extended far beyond those countries in which resistance had been lowered by malnutrition and the exigencies of war.

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1 Bern (P) #3689, 21 June 1943.

2 Censor Materials Summary, No. 27, 1 May 1943, p. 40.

3 F. Bezancon, address before the Academie de medecine of Paris, Journal of the American Medical Association 117:632 (23 August 1941).

4 Transocean, 5 March 1943.

5 Dagens Nyheter, 11 March 1943.

6 OSS, CID 37528, 5 April 1943.

7 Kölnische Zeitung, 25 June 1943.

In Norway, the average number of cases per year during the ten-year period from 1930 through 1939 was 6,657 for broncho-pneumonia and 5,025 for pneumonia crouposa. The figures were about the same in 1940, but in 1941 a marked upward trend became evident, with 9,722 and 8,500 cases, respectively, reported. During the first ten months of 1942 the figures continued to rise and pneumonia crouposa in particular seems to have taken the lead, with 10,341 cases reported for the period. The month of October was especially serious.[1]

b. Whooping Cough. A temporary increase in whooping cough occurred in Germany in 1940 and 1941. After the incidence of the disease had returned almost to its previous level, there was a new increase in 1943. Figures for the expanding territory of the Reich are as follows:

Year	Cases	Deaths	Cases per 10,000 inhabitants	Deaths per 100 cases
1939	82,068 (78,941)b	925	11.8	1.1
1940	133,479 (126,994)b	1,373	14.8	1.0
1941	107,543 (93,694)b	1,335	11.9	1.2
1942	87,960	1,028	9.8	1.2
1942 a	32,010	c	c	c
1943 a	73,319	c	c	c

a. First six months.
b. Figures in parenthesis refer to the old territory of the Reich.
c. Not available.

In Italy, the disease declined from 1937 to 1939, but has since risen to the previous level, as the following table shows:

Year	Cases
1937	24,677
1938	19,003
1939	19,591
1940	22,096
1941	24,203
1942, Jan. through May	10,844

c. Diphtheria. There was a striking increase in cases of diphtheria in Germany after the outbreak of the war and a further considerable increase in 1942. The figures for the expanding territory of the Reich are as follows:[2]

1 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C., May 1943, CID 38847.

2 During the first World War diphtheria cases rose from 117,821 in 1913 to 197,471 in 1916 and declined thereafter.

Year	Cases	Deaths	Cases per 10,000 inhabitants	Deaths per 100 cases
1936	149,973	6,284	22.0	4
1937	146,733	5,665	21.7	4
1938	149,627	5,557	21,8	4
1939	143,585	6,355	20.6	4
1940	174,052 (142,058)b	8,500	19.3	5
1941	204,918 (173,052)b	9,607	22.8	5
1942	289,863	14,764	31.2	5
1942 a	121,602	c	c	c
1943 a	124,007	c	c	c

a. First six months.
b. Figures in parenthesis refer to the old territory of the Reich.
c. Not available.

Intercepted letters indicate that the disease has spread over the whole Reich and is the cause of particular anxiety everywhere. It is not limited to children. Schools have had to be closed and hospitals have been overcrowded.[1] Diphtheria, together with dysentery, has been referred to as the worst menace on the Russian front, where the wounded were infected through open wounds.[2] However, the principal causes of the spread of the disease in the Reich are decreased powers of resistance, population shifts and overcrowding.

In March 1940, the Minister of the Interior recommended vaccination against diphtheria in areas where a spread of the disease was feared.[3] He arranged for the exclusive employment of vaccines controlled by the State and charged the Robert Koch Institute in Berlin with the collection and assessment of the results of the vaccinations.

Vaccination has not been applied universally in Germany. Early in 1942 it was reiterated by the Reich Health Leader that the voluntary character of anti-diphtheria vaccinations would not be changed.[4] In March 1943, it was stated that production of 1,000-fold serum was possible only in limited amounts, while less concentrated serum, for example, 500-fold, was available in sufficient quantities.[5]

1 OSS, CID, Censor Materials Summary No. 27, 1 May 1943, pp. 7 ff.

2 Ibid., p. 28.

3 Bulletin of Hygiene 16:425 (1941).

4 L. Conti, "Die Bedeutung der Wissenschaft, insbesondere der kinderärztlichen, in der Gesundheitsführung," Deutsche medizinische Wochenschrift, 16 January 1942, p. 57.

5 Wiener medizinische Wochenschrift, 27 March 1943, p. 246.

Among groups which have been vaccinated in recent years are youths who have to render one year of agricultural service; they are now to be vaccinated at the beginning of the "agricultural year" (Landjahr).[1] Some 41,000 small children in Leipzig[2] have also been vaccinated, as well as 95,000 children in Dortmund,[3] over 100,000 children in Cologne, [4] children up to 14 in Hamburg[5], and Berlin,[6] etc. Vaccination of young people seems to have been successful. Diphtheria cases in 1941 among the 41,000 Leipzig children who had been vaccinated in the fall of 1940 and spring of 1941 were 1.1 per thousand among those who had been inoculated twice and 3.6 per thousand among those who had been inoculated once, as compared with 6.1 per thousand among children who had not been vaccinated. With growing age, vaccination produces undesirable reactions and by effects.[7]

The increase in diphtheria is also noticeable in the Protectorate Bohemia-Moravia, Denmark, Netherlands, Portugal, Sweden, Switzerland, Norway, and elsewhere.

In the Protectorate, figures for Bohemia increased from 15.7 per 10,000 in the first quarter of 1941 to 28.9 in the corresponding quarter of 1942; the increase was less rapid in Moravia (from 17.5 to 22.7). This compares with an increase in morbidity for the Reich from 18.8 to 27.7.

Mass vaccinations of children took place in Denmark[8] in 1942 and, among adults in Jutland, in 1943. The Jutland epidemic, which raged in 1943, was attributed to the consumption of infected foodstuffs. The number of cases in Denmark increased from 917 in 1941 to 1,661 in 1942.

Mass vaccinations of children were also ordered for rural districts of France in 1943.[9] In Hungary, protective vaccinations have been compulsory for children from 2 to 7 years since 1938.[10] In 1939, Italy provided for the compulsory vaccination of children from 2 to 10 years.[11] Cases of

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1. Wiener klinische Wochenschrift, 27 February 1942, p. 176.

2. E. Hässler, "Ergebnisse der aktiven Diphtherie-Schutzimpfung in Leipzig," Münchener medizinische Wochenschrift, 10 April 1942, p. 342.

3. Medizinische Klinik, 6 March 1942.

4. Medizinische Klinik, 6 March 1942.

5. Hamburger Fremdenblatt, 29 May 1943.

6. Frankfurter Zeitung, 7 August 1942.

7. K. W. Klauberg, "Erfahrungen mit der aktiven Diphtherie-schutzimpfung bei Erwachsenen," Deutsche medizinische Wochenschrift, 1941, No. 45.

8. Dagens Nyheter, 12 April 1943; Nationaltidende, 16 February, 8 April 1943.

9. Le Petit Dauphinois, 27 March, 28 April 1943.

10. F. Farago, "Die Kontrolle der Diphtherie-Immunität mehrene Jahre nach der Schutzimpfung," Deutsche medizinische Wochenschrift, 6 February 1942, p. 137

11. Bulletin of Hygieng 15:74 (1940); Journal of the American Medical Association 115:231 (20 July 1940)

diphtheria and croup were as follows:

Year	No. of Cases
1937	28,548
1938	27,417
1939	28,101
1940	26,218
1941	21,301
1941, Jan.-May	8,761
1942, " "	8,777

Diphtheria has also made much headway in the Netherlands. An epidemic started in the fall 1942 and was still spreading in the spring of 1943. In 1942, the number of cases was about ten times higher than in 1937-39. Figures are as follows:

Year	No. of Cases
1937	1,068
1939	1,273
1940	1,733
1941	5,434
1942	12,225

The increase was smallest in those provinces where diphtheria has been prevailing for some time and the disease was most severe in older people. Vaccination has been applied on an increasing scale. In 1942, 394 of the 1,034 municipalities had children under 14 years vaccinated. The serum is supplied by the Rijksseruminstituut.[1]

In Sweden, it is planned to vaccinate 1,500,000 children in 1943. Cases of diphtheria numbered 100 in 1939 and 1,000 in 1942.[2] Switzerland reports lack of success of protective vaccinations in some districts.[3]

Reports from Norway[4] indicate that the situation has deteriorated greatly under German occupation. Before the war, medical science had fought diphtheria practically to a standstill (without the use of prophylactic immunization), and the number of cases reported until some months after the German occupation rarely averaged more than 10 cases a month for the entire country. During the period from July 1940 to June 1941, an average of 40 cases per month were reported. In July 1941, came the second rise, and for the whole year of 1941 a total of 2609 cases were reported. During the first 10 months of 1942, 5,054 cases were reported. In normal times, about 70 percent of the cases occur in rural districts and 30 percent in the cities. For diphtheria, a gradual process of reversion

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1 Nieuwe Rotterdamsche Courant, 1 December 1942; Algemeen Handelsblad, 1 December 1942; De Tijd, 1 December 1942; Journal of the American Medical Association 119:1439; Dagblad van het Zuiden, 11 May 1943.

2 News from Sweden, 13 January 1943.

3 E. Berger, "Präventive Schutzimpfungen," Schweizer medizinische Wochenschrift, 1942, No. 25.

4 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C. May 1943, CID 38847, pp. 22 ff.

has taken place during the occupation. The percentage of cases of diphtheria occurring in city districts rose from 34.9 percent in 1939 to 39.9 percent in 1940 and 56.8 percent in 1941. If the normal distribution of the population is taken into account, with 29 percent living in cities and the rest in rural districts, this analysis indicates that the morbidity of diphtheria is about three times as high in the cities as in the rural districts. In 1942, the diphtheria epidemic spread to the following districts in Norway:

Aakra	Faaberg	Horten	Skien
Aamot	Gjerpen	Hell	Stavanger
Arendal	Gjøvik	Karmøy	Trondheim
Bamble	Grue	Kragerøy	Østre Toten
Bergen	Gvarv	Lillehammer	
Brandbu	Haugesund	Mangor	
Brevik	Herøya	Notodden	

A number of cases also occurred in other districts in the provinces (fylker) of Østfold, Akershus, Hedmark, Hordaland, and Rogaland. The city of Stavanger had a very high incidence.

It is stated that from a clinical view the disease is not considered of the most malignant type. No bacteriological data are available. Though physicians in Norway launched health campaigns in order to educate the public in the matter of precautionary measures, the Quisling authorities tried to cover up the spread of the disease, and Terboven prohibited official discussion of the state of health of the country which "had improved so marvelously under the new order."

The local health authorities introduced a number of measures to arrest the spread of the disease, which seems to be by far the most important one in Norway during the occupation. Immunization was made more or less compulsory for school children in numerous localities, and a total of 15,000 was vaccinated in 1942 alone. Lack of toxoid delayed immunization for some time. Prophylaxis was resumed after toxoid was made available from Sweden and Denmark. Among 15,000 immunized school children, only four cases of mild diphtheria were observed.

In view of the situation in Norway, members of Norwegian armed forces in England and Canada have been immunized against diphtheria.

d. Meningitis. Meningitis, an epidemic inflammation of the brain, has considerably increased in Germany and Italy. It is also said to prevail in eastern Slovakia, the adjacent Hungarian districts, and the Carpatho-Ukrainian area occupied by Hungary.[1] Cases for Italy and Germany are as follows:

	Italy	Germany			
				Cases per 10,000	Deaths per
Year	Cases	Cases	Deaths	inhabitants	100 cases
1937	1,037	1,595	831	.24	52
1938	1,276	1,790	861	.26	48
1939	1,330	5,120	1,980	.74	39

1 OSS source, 5 June 1943.

	Italy	Germany			
Year	Cases	Cases	Deaths	Cases per 10,000 inhabitants	Deaths per 100 cases
1940	2,783	7,211	2,089	.80	29
1941	3,836	4,767	1,367	.53	29
1942	a	2,754	947	.31	34

a. Not available.

The decline which occurred in Germany in 1942 can also be observed in Italy, where the number of cases reported for the period from January to May was 1,780 as compared with 2,850 for the corresponding period of 1941.

The severity of the disease has declined in Germany as is indicated in the fatality figures.

Reports from Norway indicate the following increase in the number of reported cases:

Year	No. of Cases
1939	28
1940	88
1941	490

The rise started in the beginning of 1941 and culminated in the spring. The situation has later improved considerably, but the average number of cases reported is still much higher than before the war.

c. Scarlet Fever. No disease has become more widespread in Germany in recent years than has scarlet fever. Figures for the expanding territory of the Reich are as follows:[1]

Year	Cases	Deaths	Cases per 10,000 inhabitants	Deaths per 100 cases
1936	124,570	993	18.5	1
1937	117,544	829	17.2	1
1938	114,243	807	16.6	1
1939	129,495	1,032	18.5	1
1940	159,597 (138,759)b	1,700	17.7	1
1941	279,117 (247,744)b	3,233	31.0	1
1942	401,011	4,454	44.6	1
1942 a	219,676	c	c	c
1943 a	135,920	c	c	c

a. First six months.
b. Figures in parenthesis refer to the old territory of the Reich.
c. Not available.

1 During the first World War, scarlet fever cases rose from 104,430 in 1913 to 149,537 in 1915 and declined since then.

Of the 160,000 cases in 1940, 128,000 were children under 15 years.[1] It seems that the disease has been most severe in adults. Protective vaccinations were applied only hesitantly and with doubtful success. The first mass vaccination in the Reich took place in the rural district of Bielefeld in the early part of the summer of 1942.[2] Later such vaccinations were undertaken in Lueneburg,[3] Vienna[4] and elsewhere. The medical press, however, points out that vaccination does not offer certain protection.[5] Of 17 sick children among people who had been resettled, 14 had been vaccinated before with Gabritschewsky's vaccine.[6] It is said that fatality had increased though the over-all figure indicated in the preceding table does not express such increase.[7] A recent report in the German press states that, in cases of toxic scarlet fever, blood transfusions from other patients who have passed the crisis have brought good results.[8]

In German medical literature it is pointed out that a trend towards an increase in scarlet fever cases could be observed since 1937 and that therefore the declining power of resistance under war conditions could not well be held responsible for the increase (up to 1941). The importation of new strains of bacteria is emphasized; these are brought by refugees and evacuated persons into territories whose population has not acquired immunity against these types. On the other hand, the immigrants may not be immune against the domestic type of bacteria. The spread of the disease is said to be more advanced in cities than in the country. This is laid to poor housing conditions, requiring a large number of people to live in small lodgings, to the limitation of heating to one room, and to blackouts which cause people to live close together.[9]

In Bulgaria the outbreak of an epidemic was reported in the fall of 1942. Schools were closed from November 1942 to January 1943, and hospitals were overcrowded.[10]

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1 Reichsgesundheitsblatt, 7 April 1943.

2 Deutsche medizinische Wochenschrift, 25 June 1942; Münchener medizinische Wochenschrift, 31 July 1942, p. 694; Medizinische Klinik, 4 September 1942, p. 864.

3 Deutsche medizinische Wochenschrift, 15 January 1943.

4 Neues Wiener Tagblatt, 24 June 1943.

5 H. Vocke, "Erfahrungen mit dem Scharlachimpfstoff," Deutsche medizinische Wochenschrift, 1941, No. 45.

6 Konrad Hofer, "Eine kleine Scharlachepidemie eines Umsiedlerlagers unter kritischer Betrachtung der Scharlachschutzimpfung," Archiv für Kinderheilkinde, Vol. 124, No. 4, 1941.

7 H. G. Huber, "Der Scharlach in Chemnitz," Monatsschrift für Kinderheilkunde, Vol. 90, No. 3-4, 1942.

8 Bern T. (P) #1346, 26 February 1943.

9 Erika Auener, "Der Scharlach im Landkreis Chemnitz im Jahre 1941," Medizinische Klinik, 29 May 1942, pp. 510 ff.

10. Transocean, 19 October, 7 December 1942; Zora, 5, 7, November, Utro, 8 November 1942; Sofia Radio; 7 November 1942. (25443)

Denmark had 9,186 cases of scarlet fever in 1941 and 14,302 in 1942. Hospitals are badly crowded. Cases are often followed by complications.[1] A marked increase in the occurrence of the disease is reported from Norway, and it is stated that in 1942 there occurred the most severe scarlet fever epidemic in 50 years[2]. There are also numerous reports of the disease in Sweden.[3] In Italy, no increase has been observed. Figures are as follows:

Year	No. of Cases
1937	15,881
1938	13,629
1939	12,045
1940	10,792
1941	12,737
1941, Jan.-May	4,415
1942, " "	5,129

f. Jaundice. Though much is made of jaundice in intercepted letters from Germany, Switzerland[4] and France,[5] exact over-all figures are not available. An increase in the number of cases is also reported from Norway.[6] In the German press it is stated that "jaundice has occasionally been more frequently observed in recent times."[7] Censorship excerpts indicate that jaundice was, next to diphtheria and scarlet fever, the most widespread disease in Germany in 1942 and early 1943. It appears to have occurred in epidemic form and is reported from all regions of Germany. The German censor has on occasion regarded jaundice as serious enough to merit deletion of the word in letters. Some of the writers refer to this disease as a bother rather than a menace, and some believe that the soldiers have brought it from the front.[8] With reference to the organism causing jaundice, a circular of the medical authorities of the German Army, dated 1 March 1942, states that it is unknown but that there is much evidence that it is a sort of virus whose ubiquitous existence seems to be certain.[9] The disease is said to spread

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1 Politiken, 20 December 1942; Nationaltidende, 16 December 1942.

2 OSS, CID 41102, 27 July 1943.

3 OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 87.

4 OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 78 f.

5 Ibid., p. 63.

6 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington D. C. May 1943, CID 38847, p. 25.

7 Frankfurter Zeitung, 2 December 1942.

8 OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 7, 95.

9 Germany. Oberkommando der Wehrmacht. Sammelheft. Richtlinien und Merkblätter für den Heeres-Sanitätsdienst. Berlin, Reichsdruckerei, 1942.

from man to man and infections of persons in the zone of the interior by soldiers on furlough are reported. Contact with the virus through water or food is held possible, but is said to be without general importance.

g. Trachoma. This disease, which is endemic in some eastern parts of Europe, has increased greatly in Germany and the increase is not limited to the newly acquired territories. Figures for the expanding territory of the Reich are presented in the following table:

Year	Cases	Deaths	Cases per 10,000 inhabitants	Deaths per 100 cases
1936	625	0	.084	0
1937	697	0	.10	0
1938	533	0	.074	0
1939	652	0	.092	0
1940	5,586 (2,979)a	0	.62	0
1941	9,196 (2,770)a	0	1.0	0
1942	8,564	0	.95	0

a. Figures in parenthesis refer to the old territory of the Reich.

East Prussia is the principal focus of the infection, which has been spread by returning Germans from Wolhynia, Galicia, Bessarabia and Lithuania. It is also found among Polish and Italian laborers.[1]

h. Smallpox. In Germany, an order of 22 January 1940, fortified the law of anti-smallpox vaccination, which dates from 1874, and applied it to the whole territory of the Reich.[2] As long as vaccines are produced, a spread of smallpox in central Europe seems improbable. France, which before the war used to have a few cases per year, had 57 cases in 1942, of which 44 were in the Seine department and 13 in the unoccupied zone. There were only 2 cases in the first half of 1943. Recent reports from Paris indicate that the vaccination in schools is impeded by lack of paper (!).[3]

1 M. Schmidt, "Massnahmen zur Bekämpfung des Trachoms," Deutsche medizinische Wochenschrift 67:760 (1941); W. Rohrschneider, "Das Trachom in Ostpreussen," Deutsche medizinische Wochenschrift 67:758 (1941); S. Mielke, "Das Trachom bei den Umsiedlern aus Bessarabien und Litauen und seine moderne Behandlung," Klinische Wochenschrift, 7 March 1942, p. 237.

2 Bulletin of Hygiene, 16:425 (1941).

3 Les Documents, 1 April 1943.

The smallpox situation is serious in Turkey where an epidemic has broken out. Figures are as follows:

Year	No. of Cases
1939	428
1940	139
1942	1,841
1943, Jan.-May	5,625

In Yugoslavia an epidemic spread among the Moslem refugees in the Pljevlje in March 1943. There were then 200 cases at least.1 General Mihailovich's chief of medical services reports 28,000 cases of smallpox for the whole year of 1942.2

Since vaccination against smallpox is compulsory in Greece, no cases have been reported. Vaccine is manufactured by the Government Laboratory for Smallpox and Rabies Vaccine (Director, Dr. Kaskas). Normally 100 calves per year are needed for the manufacture of the vaccine. At present, however, permission has been received from the Italians for the purchase of only about half this number and as a result there is a shortage of vaccine which can only be partly made good by the vaccine imported from Canada by the Red Cross.3

i. Tuberculosis. Statements of German medical authorities indicate awareness of the impact of war conditions on the incidence of tuberculosis. Dr. Leonardo Conti, Reich Health Leader, refers to tuberculosis as the object of his greatest worry. He states that he is "aware of the fact that none of the countries participating in the war will get off without an increase in tuberculosis morbidity and mortality. Exact figures are not available yet, but it is plain to the observant physician." He asserts that the present (December 1941) increase is extremely small if compared with that of the First World War. New methods such as the intracutaneous test for detecting tuberculosis among small children and progress in the field of X-ray diagnosis have made much headway. "Diagnosis is excellent, therapeutics not quite so good. Tuberculosis therapy is too much connected with the general conditions of living." Of special importance is the need for good housing facilities.4

An examination of morbidity and mortality indicates, however, that the situation is considerably more serious than was intimated by Dr. Conti late in 1941. The following figures are for the territory of Germany as it expanded after 1939.

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1 Glas Crnógorca, 31 March 1943.

2 OSS source, 20 June 1943.

3 From a report by Dr. Elsa Segerdahl Persson entitled "Contagious Disease in Greece" and dated Athens, 28 April 1943. OSS, CID 38151.

4 Leonardo Conti, "Die Bedeutung der Wissenschaft, insbesondere der kinderärztlichen, in der Gesundheitsführung," Deutsche medizinische Wochenschrift, 16 January 1942, pp. 53 ff.

	1939	1940	1941	1942	1942[b]	1943[b]
Tuberculosis of the lungs and larynx:						
Cases	69,482	98,062	117,558	126,965	68,500	71,515
Deaths	31,114	42,989	49,653	53,999	a	a
Cases per ten thousand inhabitants	10	11	13	14	a	a
Tuberculosis of the skin:						
Cases	1,714	1,667	1,909	1,837	a	a
Cases per ten thousand inhabitants	.25	.19	.21	.20	a	a
Tuberculosis of other organs						
Cases	6,366	9,779	15,512	16,996	a	a
Deaths	3,349	4,867	5,636	6,101	a	a
Cases per ten thousand inhabitants	.92	1.1	1.7	1.9	a	a
Deaths per hundred cases	a	50	36	36	a	a

a. Not available.
b. First six months.

There was thus a severe increase in cases of tuberculosis of the lungs and larynx, no increase in tuberculosis of the skin, and a serious increase in tuberculosis of other organs. The case fatality figures indicate that the new cases are not so frequently fatal as was the smaller number of cases in the past.

The increase in tuberculosis of lungs and larynx (respiratory tuberculosis) is by no means a statistical consequence of the acquisition of new territories. Cases for the old territory are as follows:

Year	Annual Total	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
1935	60,376	15,649	16,200	18,186	10,341
1936	60,727	15,835	16,095	18,218	10,579
1937	63,570	16,881	17,787	15,034	13,868
1938	60,420	16,052	16,441	14,233	13,694
1939	67,890	19,431	18,448	15,816	14,195
1940	73,267	17,096	21,778	17,514	16,879
1941	82,043	20,660	24,155	20,266	16,962

In 1941, there was thus a 34 percent increase for the Old Reich in new cases of respiratory tuberculosis over the average of cases in 1935-38.

In the large cities of Greater Germany, deaths from all forms of tuberculosis per 10,000 people were as follows:

1939	1940	1941	1942
6.6	7.3	7.6	8.1

Compared with the increase in deaths for the whole of Germany during the first World War, these figures are much smaller. The development then was as follows:

Year	Number of deaths from tuberculosis per 10,000 people
1913	14.2
1914	14.3
1915	14.8
1916	16.2
1917	20.6
1918	23.0
1919	21.1
1920	15.4
1921	13.7

With respect to the incidence of the disease in various groups of the population, reports point out its spread among school children.[1] It is also said that a further spread of the disease among the population of the newly acquired territories in the east must be anticipated owing to the increased economic activities and the influx of people from other parts of the Reich, who are exposed to special danger.[2] Reports from other regions point out that while the number of new cases increased, the known cases did not deteriorate more than was expected. Causes which have contributed to the outbreak of new cases are overwork due to war conditions, and conditions in air raid shelters rather, according to German statements, than the deterioration of food conditions.[3]

Progress in the detection of tuberculosis is due to the extensive use of mass radiography, a serial diagnosis by means of miniature X-ray photographs by the Abren process. If films of 24x36 mm. are used, the price of each picture, including development, does not exceed 10 pf. In certain areas it is proposed to establish a "tuberculosis register" by radiophotography of the whole population, but these pre-war plans could not be carried out so extensively as was intended. In 1939 more than 500,000 persons had already been examined in Mecklenberg. In addition, this method of diagnosis has been applied to various political and youth

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1 OSS, CID 27473, 27 January 1943.

2 R. Hoffmann, "Neue Ergebnisse der Tuberkuloseforschung," Medizinische Klinik, 11 September 1942, p. 878.

3 E. Schröder and E. Ridder, "Beobachtungen über den Einfluss des Krieges auf den Ablauf der Lungentuberkulose," Der öffentliche Gesundheitsdienst, Vol. 7, Part B, p. 128. (1941).

organizations, to school children, officials, workers in certain industries, etc. By this method, however, only preliminary surveys are possible; it is necessary further to investigate suspected cases fluoroscopically and radiographically.[1]

The X-ray diagnosis in Mecklenburg resulted in the following findings: 1.25 percent of the cases showed active tuberculosis or suspicion of activity; .12 percent showed open tuberculosis.[2] If later examinations (which covered 95 percent of the population above 8 years in Westphalia and Wuerttemberg) are included, the percentage of cases suspect of active tuberculosis increases to 2.53 for a total of nearly 5,000,000 examinations undertaken between September 1938, and March 1942. Examination of nearly 500,000 relocated Germans who had returned from Germany from various regions of eastern Europe indicated a percentage of 4.24 of suspects of active tuberculosis.[3] Among 1,591 Polish laborers in Germany, 3.13 percent had active tuberculosis or were suspects and .78 percent had open tuberculosis.[4]

The tuberculosis situation is more serious among the various foreign elements of the German labor force than it is among the Germans themselves. This may in part, and among specific groups of foreign workers, be indicative of poorer conditions of health in the countries of origin of the workers concerned. It may also indicate the neglect and ill-treatment to which these groups have been exposed in Germany. The following figures indicate the differences:[5]

Nationality	Size of the sample	Percent with tuberculosis Active	Inactive
Poles	3,641	3.1	.7
Russians	1,080	3.6	5.2
Belgians	631	5.9	3.7
Dutch	445	1.3	.9
Czech	346	2.6	2.0
Flemings	300	3.7	1.7
French	200	4.0	1.5
Italians	180	3.3	3.8
Hungarians	157	2.6	4.5
Spaniards	136	3.0	4.4
Croatians	123	2.4	5.0
Estonians	105	9.3	6.6

1 Bulletin of Hygiene 16:425 (1941).

2 K. Funke, "Ergebnisse der Reihendurchleuchtungen bei polnischen Arbeitern und die Bedeutung für den Tuberkulosefürsorgearzt," Der öffentliche Gesundheitsdienst, Vol. 7, Part B, p. 220 (1941).

3 W. M. H. Weisswanger, "Ergebnisse der ersten 5 Millionen Volksröntgenuntersuchungen," Münchener medizinische Wochenschrift, 6 November 1942, p. 961.

4 K. Funke, "Ergebnisse der Reihendurchleuchtungen bei polnischen Arbeitern und die Bedeutung für den Tuberkulosefürsorgearzt," Der öffentliche Gesundheitsdienst, Vol. 7, Part B, p. 220 (1941).

5 Ewald Wildau, "Lungen-und Herzkrankheiten bei ausländischen Arbeitern verschiedener Nationalität," Der öffentliche Gesundheitsdienst, Vol. 9, Part B, pp. 1 ff. (1943).

Another sample of 6,393 foreign workers who are not specified according to national origin indicates the following percentages for active and inactive tuberculosis:[1] 3.6; 3.3. This compares with .08 and .21 percent, respectively, for a sample of 10,500 Germans.

The organized placement of tubercular persons in institutions, sanitoria, and special settlements seems to have been much disturbed owing to war conditions. It is objected that measures like this are now "very unpopular", and that newly detected cases must wait three to four months instead of two to three weeks until they are admitted to an institution. This produces psychological shocks, and "in the long period of waiting the tubercular process may advance so quickly that under certain circumstances it may change from a curable one to an incurable."[2] Much is also made of the poor housing conditions of people suffering from open tuberculosis, a situation which is bound to deteriorate under the impact of recent air raids. It is estimated that 25,000 persons affected with open tuberculosis live together with 61,500 healthy persons in overcrowded lodgings. No systematic effort has as yet been made in the direction of removing the danger of such lodgings. There are complaints about the lack of initiative and cooperation among the various authorities.[3]

In view of the growing shortage of labor it is not surprising that much attention is being paid to the problem of utilizing the productive powers of tubercular people. Altogether there are 1,600,000 tubercular persons in Germany; of these, 4-500,000 suffer from open tuberculosis. Of the latter, only 100,000 receive treatment and 200,000 are not known as sick persons.[4] On 9 June 1941, the Ministers of the Interior and of Labor issued a circular which was designed to draw a larger number of tubercular persons into the labor force. Somewhat cynically this is referred to in Germany as "Labor therapeutics" (Arbeitstherapie). In the press much is made of the labor reserves of the tubercular persons. It is even implied that the detection of their disease may be undesirable. Otherwise, it is said,

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1 Ewald Wildau, "Lungen-und Herzkrankheiten bei ausländischen Arbeitern verschiedener Nationalität," Der öffentliche Gesundheitsdienst, Vol. 9, Part B, pp. 1 ff. (1943).

2 Dr. Ickert, "Die Betreuung der Tuberkulösen während der Wartezeit bis zur Einberufung in die Heilstätte," Deutsches Aerzteblatt, 15 September 1942, pp. 299 ff.

3 H. Bräuning, "Die Wohnungsnot der Offentuberkulosen," Der öffentliche Gesundheitsdienst, 1941, Part B, p. 357.

4 Dr. Martineck, "Ueber den Arbeitseinsatz Lungentuberkulöser," Reichsarbeitsblatt, Pt. 5, 25 May 1942, pp. 275 ff.; P. P. Schneider, "Gegenwartsprobleme der Tuberkulosebekämpfung," Wiener klinische Wochenschrift, 9 October 1942, pp. 817 ff.; K. Stalherm, "Betriebsärztliche Erfahrungen in der Tuberkulosebekämpfung," Der oeffentliche Gesundheitsdienst, 1941, Pt. B, p. 347; W. Ekhart, "Unter welchen Bedingungen ist ein Tuberkuloser arbeitsfähig?" Wiener klinische Wochenschrift, 20 March 1942, pp. 221 ff.

mass radiography resulting in the detection of many cases would impair the economy.[1] The ministerial circular mentioned above reads as follows:[2]

"The capability of tubercular persons to infect others is definitely limited. The coughing person with open pulmonary tuberculosis is dangerous only in a close environment. If there is not much coughing and if he behaves in a disciplined manner, the open tubercular person represents, under normal conditions of living and working, practically a smaller danger for adults than the one to which everybody is exposed in modern life. A separation of open tubercular persons is without exception necessary with respect to children, young persons, and other persons who cough much or are undisciplined. Measures at home or at work which go beyond this are unjustified and only likely to produce unnecessary fear of infection. They are even less justifiable because of the fact that the economy cannot do without the labor power of tubercular persons willing to work."

Figures published in April 1942, indicate that about 60 percent of all persons with open pulmonary tuberculosis and 80-90 percent of those with stationary tuberculosis were then employed, some in very unsuitable positions.[3]

In other parts of Europe complaints about a deterioration of the situation are frequent. In Belgium, there has been the following increase in tuberculosis mortality per thousand deaths:

Year	Tuberculosis of respiratory organs	Tuberculosis of other organs
1938	40.3	12.1
1939	38.2	11.4
1941	52.9	14.1

No figures were given for 1940 because of the large number of deaths not specified or vaguely defined owing to war conditions. Belgian doctors are said to estimate that, in the lower-class and lower-middle-class groups, 80 percent of the children are in pre-tubercular condition. The number of persons registered for extra rations allotted to tuberculars increased, from 1 December 1941 to 1 June 1942, from 69,000 to 84,000, i.e. by more than 20 percent. The proportion of

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1 Kieler Zeitung, 1 July 1943.

2 Zentralblatt für die gesamte Hygiene, Vol. 49, p. 460, (25 April 1942).

3 Elisabeth Dehoff, "Tuberkulose: Konstitution und Arbeitseinsatz," Deutsches Tuberkuloseblatt, April 1942, pp. 73 ff.

tuberculars is much higher in the large cities than in the agricultural regions. This fact is referred to as a "severe warning to those who are systematically sabotaging the food supply of the large centres and, in particular, to the farmers who are not fulfilling their duty towards the community." The proportion of tuberculars in the various provinces at the beginning of June 1942, is shown in the following table:1

Province	Cases	
Brabant	23,000	(18,000 in Brussels alone)
Antwerp	15,053	(10,000 in Antwerp alone)
Liege	12,037	(8,506 in Liege)
Hainaut	11,436	(7,000 in Charleroi and Mons)
East Flanders	7,212	
Namur	6,816	(5,518 in Namur)
West Flanders	6,477	
Limbourg	4,230	
Luxembourg	2,226	

In Bulgaria deaths from tuberculosis in all towns (except Dobrudja) increased from 1,772 in 1941 to 1,900 in 1942. The increase coincides with the rise in food prices.[2]

In Denmark preparations were made in 1942 for protective vaccinations of school children. Vaccine of the Calmette type is prepared in the Serum Institute of Copenhagen. Vaccination seems to be given to young persons leaving school.[3] There are said to be 6,000 tubercular persons in Denmark.[4]

In France, tuberculosis has spread owing to the restrictions which prevail in that country. The number of dangerous cases[5] was estimated before the war as 550,000: it is said to have risen to 1,000,000 by 1943. Some reports emphasize the plight of the older people while others point out the dangers to children. Older people of from fifty to sixty years are said to have had relapses since their old lesions decalcify (owing to the lack of calcium, contained in milk, and lack of meat and fats.6) and release bacilli. According to other reports, tuberculosis in Paris has doubled among children from six to eight and adolescents from eighteen to twenty-five.[7]

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1 Le Nouveau Journal, 17, 18, October 1942.

2 Dnevnik, 5 July 1943.

3 Deutsche medizinische Wochenschrift, 24 April 1942, p. 434; Münchener medizinische Wochenschrift, 9 October 1942, p. 884; Nationaltidende, 14 May 1943.

4 Dagens, 23 July 1943.

5 Sept-Jours, 10 January 1943.

6 Sept-Jours, 10 January 1943, as reported in the Journal of the American Medical Association 122:123 (8 May 1943).

7 Curieux Marcellin, 6 November 1942.

In the same city, deaths from pulmonary tuberculosis were 20.4 percent and deaths from other types of tuberculosis 30.4 percent higher in the first half of 1941 compared with the corresponding period of 1939. The departmental laboratory of the Oise, which does work for several dispensaries, reports the following increase of positive examinations of sputum for the tubercle bacillus:[1]

Year	Positive results per one-thousand samples examined
1938	54.3
1939	59.1
1940	72.2
1941	211

Medical authorities are inclined to distinguish between two types of tuberculosis which have developed in recent years:[2] the outbreak of one type is said to go back to the summer of 1940 and to have been caused by fatigue and moral shock. This type is of a more polymorphic appearance and the prognosis is less grave. The other type is a bacillary bronchopneumonia with rapid evolution. It started in the beginning of 1941 and is said to be chiefly due to food shortage.

Intercepted reports from France indicate that tuberculosis, in general, assumes more malignant forms. Before the war there were many fibrous and quiescent forms which[3] were relatively curable in the sense that they were quite compatible with a long survival. At present tuberculosis is galloping and the mortality serious. New cases are rapid and malignant, though old ones which have been treated do not seem to develop much more quickly. Some of the cases of general consumption terminate fatally in a few weeks. Caseous pneumonias develop in a few days. The percentage of pleurisies is higher than usual. Food restrictions have a great deal to do with this.

Before the war, the number of cases of tuberculosis in Greece was estimated at about 300,000. Available sanatorium beds totalled 4,000 of which more than half were in Athens. Only in Athens-Piraeus were there tuberculosis dispensaries.

According to Dr. Metallinos, the former head of the Soterias (Institution for the Treatment of Lung Diseases in Athens), tuberculosis has increased greatly since the war. Statistical data are lacking. Next to bad nutrition the great spread of malaria, which makes people susceptible to tuberculosis, is regarded as one of the most important causes.

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1 Marcel Moine, "Un danger qui grandit: La tuberculose," Bull. Acad. Med. Paris, III, 125:148-50 (1941).

2 Dr. Ravina, address before a meeting of the Societé médicale des hôpitaux de Paris, Journal of the American Medical Association 119:361 (23 May 1942).

3 OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 58 ff.

With respect to available facilities and relief, it is stated that the capital has enjoyed much greater advantages than the provinces.[1]

In Italy the number of deaths from tuberculosis has increased as follows:

Year	Number of deaths	Deaths per 100,000 inhabitants
1939	22,185	49.89
1940	25,189	56.12
1941	27,556	60.74
1941, Jan.--June	13,772	
1942, " "	17,371	

Much of the increase is said to be due to food conditions. To prevent tuberculosis from spreading children are now X-rayed before being sent to holiday camps.[2]

In the Netherlands there are reports from the Hague indicating an increase of persons registered with the tuberculosis consultation office in that town. During the first nine months of 1942 their number was 13,514 as compared with 9,633 in the corresponding period of 1941. Symptoms of the disease were diagnosed in 3,740 persons, as compared with 2,913 in 1941. In Amsterdam, the tuberculosis death rate increased from 4.1 in 1939 to 6.1 in 1942. Throughout the country, deaths from tuberculosis increased from 3,272 during the first 10 months of 1940 to 4,654 during the same period of 1942.[3]

The increase of tuberculosis in Norway has resulted in systematic X-ray examinations which are to start in October 1943, and are designed to cover the whole population in two to three years. Attempts are also made at mass vaccinations on a voluntary basis. Sufficient vaccine is said to be available. The BGG vaccine, which is made at the Christian Michelsen's Institute of Bergen, is employed according to the principles of the Scandinavian tuberculosis school.[4]

In the former Polish territory now known as the Government General the number of tuberculosis cases is said to be three to five times higher than in the Reich.[5] In the former

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1 From a report by Dr. Elsa Segerdahl Persson entitled "Contagious Diseases in Greece," and dated Athens, 28 April 1943. OSS, CID, 38151.

2 OSS, CID, Censor Materials Summary, 27, 1 May 1943.

3 Standaard, 1 January 1943; Ny Dag, 3 March 1943.

4 Dagens Nyheter, 5 February 1943; Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C., May 1943, CID 38847, pp. 26 ff.

5 DNB, 18 January 1943.

Czechoslovakian territory now known as the Protectorate there were 16,668 new cases of tuberculosis during the period from August 1941 to May 1942. In the Sudeten district of the Reich the number of new cases rose from 4,749 in 1940 to 5,352 in 1941. Deaths rose from 1,376 to 1,866.[1]

In the Baltic States artificial fog, which is produced during air raids, is said to have caused lung ailments.[2]

In Rumania[3] there has been a spread of the disease on account of the war. An extremely high morbidity is reported for units of the Rumanian army. Many soldiers seem to have been sent home without treatment owing to the shortage of lung departments in hospitals. Altogether there are said to be 250-300,000 cases of open tuberculosis and accommodations for only 18,000.

Studies are available indicating increased morbidity in Spain.[4]

5. Diseases Affecting Man and Animal.

a. Tularemia. Tularemia has been observed in Poland and Austria. It is conveyed by rodents and especially by hares. Its appearance in Austria in the winter of 1942 was accompanied by numerous articles in the daily press and magazines.[5]

b. Trichinosis. Reported cases of trichinosis have increased from none in Germany in 1936 to 1 in 1937, 20 in 1938, and 30 in 1939. It is now reported from the Warthegau as well as from Austria and Poland. Its sporadic appearance seems to be due to the consumption of bad pork as well as of badgers and foxes.[6] It is likely that there are many more cases of trichinosis than are reported to the health authorities.

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1 OSS, CID 41284, 9 August 1943.

2 Handelstidningen, 8 September 1943.

3 Timpul, 10 February 1943; Donauzeitung, 14 July 1943, Dres. Ursu and Bumbacescu, "Tuberculosis Problems in Time of War," Ardeadul Medical, Vol. 1, 1941.

4 Gonzalez de Vega and Gomez-Moreno, "Algunas observaciones epidemiologicas y clinicas sobre la Tuberculosis en la Provincia de Granada en la Postguerra Espanola," Rev. Clin. Espanolo 5:33-38, 15 April 1942.

5 OSS, CID 35939, A-6191, 5 June 1943.

6 OSS, CID 35939, A-6191, 5 June 1943, Lehmensick and Sendisaya, Zeitschrift für Parasitenkunde, 1941.

6. Miscellaneous Diseases.

a. Vitamin Deficiencies. This report is not concerned with nutrition proper. It will, however, point out some of the consequences of specific nutritional defects which have been observed in Europe, as well as measures which have been undertaken in order to offset these deficiencies.

Up until the war there was considerably less vitamin-consciousness in Europe than in the United States. As elsewhere, the war has been conducive to the promotion of knowledge concerning vitamins. Such efforts at enlightening the public as have been made originated from public authorities or from labor organizations. It is these organizations which also handle the distribution of vitamins among the population in a planned and organized manner. Execution of the various programs requires a large personnel.

An order by Hitler of 15 August 1941, established a Reich Institute for Vitamin Research and Testing (Reichsanstalt für Vitaminprüfung und Vitaminforschung). For the time being this Institute is located in temporary quarters in Leipzig until more elaborate facilities are available.[1]

Germany seems to be well equipped with all vitamins except Vitamin A (commonest commercial source is fish liver oil). This vitamin affects growth, skin, and the mucous membrane; lack of it causes night blindness and the tendency of wounds to suppurate. Since early in 1941, oleomargarine is enriched in Germany by a Vitamin A concentrate from liver oil of the blue whale, halibut and cod-fish. The concentrates are diluted with peanut oil and used in the following standardized form: 10 Kg. concentrate per 1,000 Kg. fat (=1,250 Kg. margarine).[2]

In Sweden, margarine is enriched with Vitamin A in the form of carotin. The previous rate of 10 international units per gram was raised in 1943 to 12.5. Swedish margarine is also supposed to contain 10 international units of Vitamin A in the form of cod liver preparations, but owing to the existing shortage of that product it contains only 3.75 international units of cod liver oil per gram for the time being. Thus, the total admixture of Vitamin A in Swedish household margarine is now 16.25 international units per gram.[3]

There are reports from France which indicate that chocolate manufactured in Marseilles is enriched by the addition of fish liver containing Vitamin A. The product is said to be distributed by the Secours National to children in tablets of 30 Gm., containing 250,000 I. U. each.[4]

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1 NDZ, 28 December 1942; Reichsgesetzblatt, Pt. 1, 1941, p. 505; Herman Ertel, "Über den Aufbau der Reichsanstalt für Vitaminprüfung und Vitaminforschung," Die Ernährung 8:1 ff. (January 1943)

2 H. Ertel, "Die Vitaminisierung der Margarine as Sicherheitsfaktor in der Ernährung," Deutsche Fettwirtschaft, 1941, No. 26.

3 Stockholm, No. 123, 14 May 1943.

4 Transocean, 23 March 1943; L'Effort, 24 March 1943.

Cod liver oil contains Vitamins A and D. France used to import all cod liver oil from abroad and is now cut off from foreign supplies. Attempts are made at domestic production.[1] In the Netherlands, cod liver oil is available only on medical prescription.[2] Late in 1942 it was reported that the Belgian Red Cross had bought 13 tons of tuna liver oil, a substitute for cod liver oil, from a Spanish fish canning firm which had developed a large-scale production and export business.[3] In Italy, cod liver oil is not available Nearly the entire supply used to be imported. Tuna liver oil is used in its stead.[4] Denmark, since February 1943, provides for the distribution of cheap cod liver oil to children under 15 years of age.[5] In Norway, school children are supplied with the oil, but supplies were reported to be running short owing to deliveries to Germany. In November 1942, it was reported that Germany had obtained 14,000 tons altogether from Norway since April 1941.[6] Germany's optimum requirements of Vitamin A and D concentrates are estimated at 6,000,000,000,000 international units of which 4,200,000,000,000 are supplied from Norway in the form of cod liver oil.[7] Under the commercial agreement with Sweden of February 1943, Norway is to receive 190,000 kronor ($47,500) worth of cod liver oil from Sweden.[8]

With respect to foreign trade in Vitamin A preparations, the British Ministry of Economic Warfare is satisfied that there have been no exports of Vitamin A by Nestle's in Spain to Nestle's in France or Italy.[9] However, other reports indicate that six to seven cases of vitaminized fish oil, each case containing ten tins of five Kilograms each, are shipped every day by air from Spanish Morocco to Seville and thence to Germany. A large number of cases also leave by small fishing boats.[10] The Spanish annual production of vitamin concentrates in the form of fish paste is estimated as 300 tons and the annual production of fish liver oil is said to be 4,700 Kilograms. About 80 percent of the fish liver oil and all of the vitamin concentrates are available

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1 Europa-Kabel, 27 August 1943.

2 Nieuwsblad van het Noorden, 23 September 1942.

3 OSS source, 12 December 1942.

4 Europa-Kabel, 27 August 1943; OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 49.

5 Nationaltidende, 3 December 1942; Berlingske Tidende, 27 November 1942; Social-Demokraten, 12 and 29 December 1942; Kristeligt Dagblad, 29 January 1943.

6 Aftontidningen, 17 November 1942.

7 OSS sources, 29 January 1943.

8 News from Sweden, 3 March 1943.

9 London (P) A-457, 11 June 1943.

10 OSS source, 14 April 1943.

for export.[1] Portugal is reported to be an importer rather than an exporter of Vitamin A, as she has no facilities for extracting it.[2]

With respect to Vitamin B, much is made in Germany of the whole grain bread (Vollkornbrot). The germ and other components of the grain which are contained in this bread have a content of Vitamin B-1, but it has been pointed out that the baking process may destroy the latter to some extent.[3] Lack of Vitamin B-6 is said to have caused some cases of pellagra in Italy;[4] however, the number of reported cases of this disease has declined constantly since 1939. This disease is also observed in Rumania and Spain; in the latter country a fatality of 62 percent of the observed cases has been reported. The situation is said to have been improved in recent times. Instead of pellagra there are now cases of lathyrism, another deficiency disease, reported from Spain.[5] In Italy vitamin B-6 is also applied to counteract Leiner's disease which is said to have made its appearance owing to malnutrition.[6] In Bulgaria, the Directorate of Public Health attributes the spread of pellagra to the consumption of maize.[7] In the Ostland, a vitamin and hormone factory has resumed activity and has commenced the production of Vitamin B from the yeast available there in great quantities.[8]

Vitamin C is anti-scorbutic. It is more needed at certain ages and under certain conditions than otherwise. Owing to food conditions, scurvy is reported from Belgium,[9] France, Norway,[10] and other countries. A medical inspection of children in Marseilles showed that 66 percent of those below the age of 18 had no Vitamin C in their blood.[11] Vitamin C is being widely distributed in Germany and recent reports state that it has been possible to produce it from ordinary pine needles.[12] In Italy it is made from citrus fruit.[13] Since this vitamin is contained in potatoes, the large consumption of potatoes in Germany necessarily makes some vitamin available to the population.

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1 OSS source, 9 April 1943.

2 OSS source, 1 September 1943.

3 C. Tropp, "Das Vollkornbrot und sein Vitamin B-1 Gehalt," Deutsche medizinische Wochenschrift, 1942, no. 10.

4 OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 42.

5 Medizinische Klinik, 2 January 1942, p. 19.

6 OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 42.

7 Zora, 13 June 1943.

8 Europa-Kabel, 6 August 1943.

9 Journal of the American Medical Association 120:548 (17 October 1942).

10 Trots Alt, 9 October 1942.

11 American Friends Service Committee, Bulletin, 13 April 1942.

12 NPD, 31 March 1943.

13 Europa-Kabel, 6 August 1943.

On 19 February 1940, the German Minister of the Interior issued a circular providing in some areas for the daily distribution of a tablet of "Cebion sucré" from 1 May to 30 June 1940, among all school children aged ten to fourteen. This preparation is manufactured by the firm of E. Merck of Darmstadt and is distributed in glass bottles. Each tablet contained 50 Mg. of ascorbic acid (pure Vitamin C) and beet sugar. The age period of ten to fourteen was selected in order to place the children in a resistant state on attaining the age of puberty and, particularly, at the time when they leave school and begin to work. The selection of the areas was partly in accordance with medical statistics of the years following the First World War when scurvy was observed in Germany, and partly by taking account of the low Vitamin-C content of the diet in certain regions where the consumption of fruits and vegetables is low. Altogether more than 60,000,000 of "Cebion sucré" tablets were used to treat 1,600,000 school children in the large cities and industrial districts of the Rhineland, Saxony, Upper Silesia and Westphalia.[1]

Since the results of the trial were regarded as successful, distribution of the tablets was repeated during the winter of 1941-42 and extended to nurslings, pregnant women, nursing mothers and miners.[2] The number of tablets distributed among school children was then 186,000,000. Pregnant women were supplied with tablets containing a combination of "Cebion sucré" containing 50 Mg. of ascorbic acid and 50 Mg. of calcium (calculated as CaO). This was given beginning with the seventh month of pregnancy. Nurslings and nursing mothers were supplied with the original "Cebion sucré" tablets, with nursling and mother each receiving 30 tablets per month. If the child was exclusively nursed by the mother, only the latter was to receive the tablets. If necessary, the provision of the tablets for nurslings could be extended up to the completion of the second year. Altogether, 1,750,000 mothers and nurslings are reported to have been supplied with a total of 264,000,000 tablets. Miners were to receive the same type of tablets.

A similar distribution of vitamin C in the form of "Cebion sucré" was arranged in the winter of 1942-43.[3] At that time, however, the content of ascorbic acid was reduced from 50 to 30 Mg. Whether this reduction was ordered because of increased demand of vitamins for the armed forces or for other reasons cannot be ascertained. In 1942 altogether 4,000,000 persons are reported to have been provided with 450,000,000 daily doses of Vitamin C.

While the Government General and the Protectorate of Bohemia-Moravia were expressly excluded from these arrangements, a similar plan was said to be in preparation in the Netherlands in the spring of 1943.[4]

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1 Bulletin of Hygiene 16:431 (1941).

2 Münchener medizinische Wochenschrift, 23 October 1942, p. 922.

3 Reichsgesundheitsblatt, 16 December 1942, p. 891; NDZ, 16 December 1942.

4 Nieuws van den Dag, 8 March 1943.

During the past two years, the German Labor Front has also arranged for the distribution of vitamin preparations combining A, B, C, and D vitamins among heavy workers.[1] The distribution takes place in spring. The preparation is called Vitamultin and has been compounded by a Professor Morell. It consists of grain germs, thiamin, ascorbic acid, calcium biphosphate, sugar, and lemon. Ninety tablets are issued per head. The expenses of the program, whose execution is entirely in the hands of the labor organizations, are borne by the employers. It is reported that an extension of the program to public employees was not considered feasible owing to insufficient supplies.[2]

With reference to foreign supplies, it has been reported that Germany imported 900 Kilograms of pure Vitamin C from Bulgaria in 1941.[3] Bulgaria produces this from rose hips. Other reports indicate that Germany imported 370 tons of rose-hip flour from Bulgaria in 1940, 1,500 tons in 1941, and between 3,000 and 4,000 tons in 1942.[4]

Lack of Vitamin D causes rickets, decalcification of teeth and bones, and sometimes even spontaneous fractures. Vitamin D can be produced by irradiating relatively small amounts of fish oil. Early in 1943 it was reported that two German chemists, Dimroth and Stockstrom, had succeeded in producing a synthetic Vitamin D. It is not known whether synthetic production is practicable, however.[5]

Since the campaign against rickets had failed to give the desired results in Germany, the Minister of the Interior, in a circular of 9 November 1939, made arrangements for free anti-rachitic prophylaxis for each infant.[6] All infants were, from the third month on, to receive Vitamin D in the form of synthetic "Vigantol," as prepared by the firms of Bayer in Leverkusen and Merck in Darmstadt. A phial of Vigantol was to be given to each mother with instructions to give her child 5 drops of the preparation daily. At the end of two months a second phial was to be supplied. A final examination was to take place after the second phial had been given. If signs of rickets were detected, the child would be transferred for treatment to the family or insurance doctor. One 10-cc. phial of "Vigantol" costs the health offices 80 pf. The health offices would also have the opportunity of using, as sources of Vitamin D, either irradiated milk or cod liver oil, if possible standardized. Milk is irradiated in some German cities, for example, Frankfurt-on-the-Main.[7]

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1 Münchener medizinische Wochenschrift, 4 September 1942; Klinische Wochenschrift, 4 October 1941, p. 992.

2 Die Ernährung, 7:83 (1942).

3 Münchener medizinische Wochenschrift, 29 May 1942, p. 506.

4 M. A. report, MID, 31539, 3 March 1943.

5 Social Demokraten, 20 February 1943.

6 Bulletin of Hygiene 16:431 (1941).

7 Frankfurter Zeitung, 8 January 1943.

As a result of this prophylaxis, it is reported that rickets did not increase in volume in 1942. The program was continued throughout the following year with the modification that the amount of Vitamin D was gradually increased. Whether this was intended from the beginning, whether increased production of the preparation was conducive to greater liberality, or whether the original amount proved too small cannot be ascertained. The Vitamin D content of Vigantol, which had been 3 Mg. per 10 ccm., was increased to 5 Mg. in 1941. An especially potent preparation, "Vigantol Forte," which is used for shock therapy, was then to contain 10 Mg. per 1 ccm. instead of 7.5 Mg. Late in 1942 the daily application, which then was 5 drops of "Vigantol", was increased to 10 drops and the total supply was lifted from 2 to 3 phials. It is not unlikely that the increase in the strength of the mixture and its increased application is indicative of greater need for offsetting the lack of Vitamin D in the food. Officially it was stated in Germany that the distinction between the early treatment of rickets and the prophylactic application of Vitamin D is frequently not feasible on practical grounds and that therefore the prophylactic dose was to be made equal to the therapeutic one.[1]

There are reports of rickets among Danish, French,[2] and Belgian[3] children. In France, there have been complaints that, in some cases, teeth are brittle as glass. In Denmark, an examination of Copenhagen children indicated that every seventh child had rickets.[4] A vitamin program was started in 1943. Children below the age of 15 years and pregnant women are given a preparation called "Vitaminol," which consists of 50 percent Danish medicinal cod liver oil and 50 percent carotin oil containing 1,000 Vitamin A units per gram, with an addition of Vitamin D-2 oil containing 150 units per gram. This preparation is sold upon the presentation of ration cards. Five coupons entitle the holder to buy one eighth of a liter of "Vitaminol" per month, at the price of 43 oere. Needy persons may obtain it free. It is distributed through the ordinary commercial channels.[5]

Vitamin E is contained in the whole grain bread produced in Germany which retains the germs and other components of the grain. Lack of this vitamin brings about miscarriage and premature births, the number of which is increasing rapidly in parts of Europe.

b. Caloric Deficiencies. It is not proposed to deal here with the food shortage in Europe as such but rather

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1 Reichsgesundheitsblatt, 1943, No. 7, p. 92; Wiener medizinische Wochenschrift, 9 January 1943, p. 38; Deutsche medizinische Wochenschrift, 29 August 1941, p. 962.

2 OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 57.

3 Gazette de Lausanne, 20 January 1943.

4 Kristeligt Dagblad, 23 January 1943.

5 Berlingske Tidende, 26 January 1943.

with some of its symptoms. The Agriculture and Standards of Living Section of this Office has prepared estimates of the 1942-43 nutritive value of average diets in various countries. These estimates are as follows (in calories):

Germany	2,784	Netherlands	2,461
Italy	2,619	France	2,431
Denmark	3,283	Norway	1,980
Bulgaria	3,120	Belgium	1,713
Yugoslavia	2,620	Albania	1,420

These figures are considerably higher than those reported for Germany during the First World War.[1] In Frankfurt-on-the-Main, calories of rationed foods declined as follows:

Year	Caloric value of rationed foods	
	Highest value	Lowest value
1915	3100	2750
1916	2750	1250
1917	1400	700
1918	1900	1400
1919	2000	1400

There was then a concomitant decrease in weight, as illustrated by the especially striking case of inmates of institutions. Inmates of a German jail showed the following decline in average weight (in kilograms):

1914, July	67.5
1915	59-66
1916	56-59
1917, September	52-56

Though the food situation in Germany proper seems to be much more favorable now in terms of calories, it goes without saying that calculation in these terms must be supplemented by a qualitative appreciation of the foodstuffs available to the population. This point of view has found expression in strong terms in the volume on German nutrition during the First World War. The expert of the Carnegie Foundation stated that caloric calculation must operate within limits set by psychological considerations. "Man needs a differentiated diet. He is not served by receiving only the calories needed for the maintenance of life. He cannot live from the 'heat value of the utilized food' as a machine lives from coal.... The practical solution of the food problem is not concerned with the supply of necessary calories but with the supply for the hungry population of bread, meat, potatoes, fat, milk, eggs, and vegetables as they are needed for the daily diet."[2] If emphasis is placed on specific foodstuffs rather than on quantities of calories, the present situation seems much less favorable. The normal consumer in Germany

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1 F. Bumm, ed., Deutschlands Gesundheitsverhältnisse unter dem Einfluss des Weltkrieges, Pt. 1, Stuttgart, Deutsche Verlagsanstalt, 1928, p. 72.

2 A. Skalweit, Die deutsche Kriegsernährungswirtschaft, Stuttgart, Deutsche Verlagsanstalt, 1927, p. 10.

receives only a weekly ration of 9 ounces of meat, 8 ounces of sugar, 7½ ounces of fat, very little milk and occasionally an egg. The difficulties which have been encountered are illustrated in a recent article in the Voelkischer Beobachter, Vienna edition, of 1 November 1942, which states that the Viennese health authorities were then dealing with 250,000 complaints. From this the conclusion is drawn that, apart from the several thousand patients who were in hospitals at that time, 250,000 Viennese were in poor health. This means that every seventh person suffered from some ailment or other. The only effective treatment is additional food such as meat, rice, eggs, butter, fats, full milk, and coffee, -- all scarce.

The fact that children grow thinner is implicitly admitted in Germany, but complaints about this phenomenon are held unjustified because it is "a normal event between the ages of ten and fourteen."[1] Other reports speak of the "accelerated" development of some school children which is contrasted with the "retarded" development of others. "In urban school classes of the ages from twelve to seventeen one gains the impression that the various ages were mixed. Some appear almost adult while others look and behave like children. But they all are of the same age."[2] It is also admitted that men over sixty occasionally suffer a considerable loss of weight "because in normal times all groups of the population enjoyed good food."[3] A study of Leipzig school children concludes that the acceleration of the rate of growth, which has been observed since 1918, has now apparently ceased. The increase in average height and weight is not as great as before. The increase in the weight of the older students of secondary schools is said to be unsatisfactory.[4]

The situation in other parts of Europe varies. Vague over-all estimates which are commonly reported often depict the conditions in the cities and the plight of the least fortunate part of the population. A competent observer suggests that losses from 15 to 25 kilograms are the rule in Europe.[5] Even in Switzerland losses of weight are very frequent. In Belgium and France pregnant women rarely attain the increase in weight of at least five kilograms which they should show at the time of the delivery; the growth of children is impeded, and the energy and working capacity of the adults deteriorate.

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1 Frankfurter Zeitung, 6 June 1943.

2 Münchener Neueste Nachrichten, 19 May 1943.

3 Das Reich, 21 March 1943.

4 Koch, "Längen und Gewichte der Leipziger Kinder im Kriegsjahr 1941," Der öffentliche Gesundheitsdienst, 1941, Pt. A, p. 609.

5 Raymond Gautier, "The Deterioration of Health on the Continent from Epidemics and Food Shortage," London, Royal Institute of International Affairs, 1942.

In France, a recent study of the health of workers in Toulouse indicates an average loss of weight of 10 to 20, sometimes 30, percent of the previous weight, with a concomitant increase in industrial accidents owing to reduced physical endurance. The reduction in muscular resistance caused an increased number of hernias.[1] In Belgium, adults are reported to have lost an average of one-fifth of their weight.[2] In Yugoslavia, the average loss of weight is said to be from 6 to 10 Kilograms.[3] In Finland, men are said to have suffered an average loss of weight of about 6 to 7 Kilograms compared with 5 Kilograms for women. The landowners have presumably been able to maintain their weight.[4] In Norway, people are reported to have suffered an average loss of weight of 10 to 20 percent.[5]

A Swedish labor union leader who visited in Oslo states that approximately one third of the school children have a loss of weight from 10 to 20 Kilograms. Another third has shown a loss from 2 to 10 Kilograms. The remaining third has shown insignificant loss, and, in certain cases, a moderate increase in weight.[6]

In 1942, Doctors Jean Girard, Pierre Louyot and Marcel Verdin reported to the Academie de Medecine of Paris the results of a study of the conditions of ninety persons, mostly workmen, chauffeurs, engineers, unskilled laborers and fitters. These people had complained of a progressive weakness which appeared on awakening in the morning, increased during the morning hours and decreased after lunch. The accompanying vertigo sometimes gave the feeling of a cerebral vacuum and compelled the person to lean against something or sit down. This condition resulted in incapacity to work, and certain patients had to go to bed. They suffered nocturnal perspirations and became very sensitive to cold, even during the summer. This state was accompanied by psychic depression and apathy. In several cases their families sought confinement to an asylum. Arterial hypotension was present, loss of weight and paleness of the skin, without any relation to the figures for the hemoglobin of the red blood cells. All the syndromes can be ascribed to the present food shortage. Various tests produced the following findings: an increase in bleeding time; a hypoglycemia below .85 percent in 70 percent of the patients; a hyposcorbemia in 70 percent of the patients, the Vitamin C being below 8 Mg.; a mononucleosis in 58 percent of the patients; eosinophilia in 53 percent of the patients; a slight anemia in 25 percent.[7]

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1 Le Petit Journal, 22 March 1943.

2 OSS source, 31 October 1942.

3 OSS source, 20 June 1943.

4 OSS source, 8 November 1941.

5 Bern T. (P) #363, 16 January 1943.

6 OSS, CID #41102, 27 July 1943.

7 Dres. Jean Girard, Pierre Louyot, and Marcel Verdin, report to the Academie de medecine de Paris. Journal of the American Medical Association 120:386-87 (3 October 1942).

If people lose a great deal of weight in consequence of food deficiencies, there occurs a replacement of the body weight by accumulation of water. If this process continues, the so-called famine oedema makes its appearance. This pernicious disease is symptomatic of the lack of protein in the blood and its progress can be arrested by animal protein. This disease was observed in Germany during the First World War but is not indicated in present reports. It exists in Belgium[1] and Greece.[2] An article describing the conditions of forty-eight Belgian patients[3] who suffered from this disease states that the protein osmotic pressure varied between 12 and 35 Cm. In 77 percent of the cases an abnormally low percentage of assimilation was evident. Bradycardia was a frequent appearance. The lowest pulse-rate was thirty-eight. Diuresis usually set in once the patient was in the hospital. The protein osmotic pressure hardly changes after the oedema has disappeared, and relapse occurs frequently when the patients leave the hospital. It is stated that relapse could only be avoided if the food supply were improved. As during the First World War, it seems that the inmates of penal institutions, hospitals, and the like, suffer most from malnutrition. A report from Norway[4] indicates that in the Gaustad Mental Institution cases of oedema occurred in the fall of 1942 among the debilitated schizophrenic patients. Of some fifty cases about fifteen died following gastro-enteritis. From Medical Division B of the State University Hospital there are reports of ten to fifteen cases among forty-five nurses of the division, suffering from poly-neuritis (pains in the extremities, changes in reflexes, asthenia). They were cured by the injection of Vitamin B. From a private clinic there are reports of eight cases of oedema and polyneuritis among nine nurses. From other sources among privately practicing physicians there are reports of sporadic occurences of oedema of unknown cause, particularly among women. Thus from Drammen Hospital there are reports of certain cases of famine oedema with reduced serum protein. In February 1943, a professor of medicine was admitted to a hospital with a similar pathological picture. In whatever way these pathological symptoms are classified (famine oedema, avitaminosis, hypovitaminosis), the lack of fat is considered an essential etiological factor.

According to an investigation undertaken in an Oslo factory in May and June 1942, the symptoms of malnutrition include the following:[5]

1. Feeling of hunger to a smaller or greater degree. Many are hungry "all day," hungry "immediately after the meals," "always hungry," "so hungry that I cannot work the last hours before dinner."

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1 R. Weekers, "Symptomes oculaires de l'oedeme de carence," Ophthalmologica 103:81-87 (February 1942).

2 Dr. Elsa Segerdahl Persson, OSS, CID 38151.

3 Bulletin de l'academie Royale de médecine de Belgique, 1942.

4 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C., May 1943, p. 18. CID 38847.

5 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C., May 1943. CID 38847. Pp. 17 f.

2. General weakness, tired feeling, reduced capacity for work, endurance, initiative and physical capacity, is claimed to a smaller or larger extent by about 80 percent. Several reports from the country indicate that this is a generally occurring phenomenon.[1] From one factory it was reported that the capacity for work was reduced 45 percent, and it is stated that this decline is certainly not exclusively caused by sabotage.

3. Increased tendency to sleep is claimed by as many as 60 percent. Many state that they are able to sleep in streetcars or buses on their way home, many plunge headlong into the bed as soon as the evening meal is consumed, while others indicate that they certainly have a stronger craving for sleep but that they do not sleep more than before. The nervous strain evidently also contributes to disturb the sleep and render it restless.

4. About 90 percent indicate that they feel cold much more easily than before. This is said to be a well-known symptom of caloric undernourishment.

5. Frequent urination is a strikingly common symptom. It is found in about 70 percent of the cases examined. The majority must get up once or several times during the night. This has been attributed to the increased water content of the food (potatoes, vegetables, soups, porridge, etc.).

It is of interest that these symptoms have been observed almost as frequently in individuals who have retained their weight as in individuals who show the most marked emaciation.

Nutritional experts state the following manifestations of the deficient food situation in Norway under the occupational regime:

1. Locally in the gastro-intestinal tract:

a. An increase in pathological-anatomical-organic disease like gastro-duodenal ulcer, cancer, etc. has not been demonstrated with certainty.

b. A considerable increase in functional gastric dyspepsia is probable.

c. A considerable increase in diseases of the colon, from minor pains in the abdomen to fermentative dyspepsia and secondary colitis has been demonstrated with certainty.

2. After absorption from the gastro-intestinal tract:

a. Quantitative subcaloric feeding with emaciation hunger and reduced working capacity is present.

b. Qualitatively deficient feeding has caused an increase in B avitaminosis (Beri-Beri, Aribeflavinose, Pellagra). Avitaminosis (hemeralopia) and scurvy has been reported, but definite clinical evidence has been lacking in most cases.

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1 Note the corresponding complaints of tiredness in Germany, pp. 63, 64, below.

A marked increase in the number of cases of acute diarrhea is considered to be the result of quantitatively and qualitatively deficient diet.[1] While in normal years a sharp decline in the numbers of cases is observed during the winter months, no such decline occurred in 1940 and, from the month of August, the incidence continued to be high also in the winter months, with a reported 5,693 cases for the month of April, as compared to a normal number of 1,419 cases in April 1940. The largest number of cases was observed in August 1941, with more than 14,000 cases, which is more than half of the total number of cases reported for the entire year of 1939. The last three months of 1941 showed a definite decrease, but the figures for January-October 1942, indicate another considerable rise.

c. Alcoholism, nervous disorders, fatigue. There are no indications that alcoholism proper has made any headway during the war and the supply situation is undoubtedly responsible for this. During the First World War[2] there was a considerable decline of alcoholism in Germany. In Prussia, the proportion of patients admitted to institutions because of alcoholism declined from 10 percent of all admissions in 1913 to 2 percent in 1918.

During the First World War there occurred, on the other hand, a great increase in the consumption of narcotic drugs. People became addicted to morphine and cocain after having had occasion to try it, and the opportunities of trying it increased because of the large number of wounded and the large number of health personnel who had access to drugs. Mental depression and the lack of variation and stimulation in the food supply increased the dependency upon these drugs. Between 1914 and 1918 the proportion of drug addicts doubled among the patients admitted to institutions in Prussia.

In the present era of Ersatz it seems that people have recourse to dangerous drugs. Morphine and cocain are more difficult to obtain and people have become accustomed to less harmful insomnia powders, hypnotics, and the like. The consumption of barbiturates and other sedatives has increased sharply,[3] especially during air raids. Such drugs are no longer available freely and can be procured only on prescription.[4] The apprehension of the authorities is reflected in the establishment of a Reich Institute for Fight Against Abuse of Narcotic Drugs (Reichsmeldestelle fuer Suchtgiftbekaempfung) which is designed to prevent a development similar to that during the First World War.[5] German medical

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1 Medical and Sanitary Data on Norway, p. 30.

2 F. Bumm, ed., op. cit., p. 266.

3 Journal of the American Medical Association, 114:1385 (6 April 1940), 119:1124 (1 August 1942).

4 Bulletin of Hygiene 16:432 (1941).

5 Münchener medizinische Wochenschrift, 23 October 1942, p. 922.

journals still contain numerous articles on the abuse of pervitin.[1] This drug, which is now placed on the narcotics list and is no longer freely available, used to be issued by the Army and Air Force for the purpose of stimulating and strengthening the power of endurance. It was widely used by the civilian population. Persons became addicted to it and undesirable effects such as hallucinations, insomnia, exhaustion, and collapse appeared.

Recent reports point out that air raids have produced specific nervous disorders (Luftminenpsychose) such as trembling, nerve irritation, and hysteria. At the siren's sound many people are reported to have a "feeling of suffocation, heart pains and a feeling as if the whole body were heavy as lead."[2]

German medical journals contain articles on fatigue to an extent which must be characterized as striking. Overwork, haste, and restlessness also cause many cases of insomnia. With respect to specific physiological consequences of psychic disorders, such items as premature births and stomach troubles are mentioned.

It is interesting to reproduce synoptically parts of two papers on nervous disorders. The first refers to World War I and was written by Professor Bonhoeffer some years later. The second is part of a recent article in the Muenchener medizinische Wochenschrift.

World War I[3]	World War II[4]
"The influence of the war upon the nervous system of the population was most powerfully expressed during the second half of 1916 and during 1917 and 1918.	"In a time of the highest physical and intellectual strain we observe a number of pathological phenomena which are in part novel, in part,

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1 H. Greving, "Psychopathologische und körperliche Vorgänge bei jahrelangem Pervitinmissbrauch," Nervenarzt 14:395 (1941); F. Wunderle, "Experimentalpsychologische Untersuchungen über die Wirkung des Pervitin auf geistige Leistungen," Archiv für Psychiatrie 113:504 (1941); J. E. Staehelin, "Pervitin-Psychose," Z. Neur. 173:598 (1941); H. Druckrey, "Weckmittel," Medizinische Klinik, 1941, p. 885; H. Auerwald and R. Briken, "Gefahren des Pervitinmissbrauches," Medizinische Welt, 1941, p. 897; F. Dittmar, "Pervitinsucht und akute Pervitinintoxikation," Deutsche medizinische Wochenschrift, 13 March 1942, p. 266. Also OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 30; OSS, CID 35939, A-6191, 5 June 1943.

2 Stock. (P) #2051, 3 July 1943.

3 Bumm, F., ed., Deutschlands Gesundheitsverhältnisse unter dem Einfluss des Weltkrieges, Pt. 1, Stuttgart, Deutsche Verlagsanstalt, 1928, p. 261.

4 M. Hochrein and I. Schleicher, "Chronische Ermüdung als Krankheitsursache," Münchener medizinische Wochenschrift, 16 January 1942, p. 47.

On the subjective side, there were noted complaints about the growing difficulty and slowness in accomplishing intellectual and physical work; quick fatigue; difficulty in concentrating and in finding the right word.

Objectively there was among many persons a certain restlessness and increased irritability; increased suggestibility; increased need for sleep, with the sleep often being restless and disturbed by dreams."

however, so numerous in their appearance that we probably have to associate them with the rhythm of our time. What we have in mind are sick people of all social strata who have to perform lengthy tasks in responsible positions.

Complaints about fatigue and general weakness are heard. Men, who always enjoyed the best health and displayed excellent ability, complain that they are unable to perform their previous work. There is a general heaviness of the body. After little strain they are easily tired. Frequently there are complaints of permanent tiredness. This tiredness cannot be overcome by means of straining all of their energy. Together with this feeling of weakness there is a deterioration of the power of intellectual concentration. Often thoughts can be worked out only with great effort. Often there is a feeling of emptiness in the brain. At the same time the men suffer from an inner restlessness."

The similarity of the symptoms is striking indeed. The restlessness, it is pointed out in the 1942 article, makes it difficult for the persons to accomplish work which requires some time. Often these symptoms are combined with complaints about a disturbance of the functions of specific organs such as the digestive apparatus, the circulation of the blood, the brain, etc. In the Leipzig clinic of the authors, stomach ulcers and inflammations of the stomach increased from 695 to 1190 cases; high blood pressure from 637 to 937; especially prominent was the increase in vague organic complaints (heart, stomach, intestines, head, etc.) from 459 to 1790. "Relatively young persons, who had been on the peak of their productive capacity, suddenly die from acute heart failure.... Angina pectoris is extremely frequent.... The number of patients with vague complaints who previously used to be referred to as neurasthenics has grown very much.... Chronic fatigue represents the transition from health to sickness. If the working man who collectively represents the labor and military strength of a people is not treated with care, if this high good of a people is utilized in a predatory manner, - then diseases appear which develop out of functional disturbances and become serious organic changes."[1]

B. Food as a Cause of Disease

1. Food Poisoning. The statistics of reportable diseases do not indicate a significant increase in ptomaine poisoning.

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1 M. Hochrein and I. Schleicher, "Chronische Ermüdung als Krankheitsursache," Münchener medizinische Wochenschrift, 16 January 1942, p. 47.

The following table presents the data for ptomaine poisoning in Germany from 1936 through 1942. The figures cover the expanding territory of the Reich during the period.

Year	Number of cases	Number of deaths	Cases per ten thousand inhabitants	Deaths per hundred cases
1936	3,675	77	.55	2
1937	2,354	95	.35	4
1938	2,572	90	.38	3
1939	2,063	63	.30	3
1940	3,158	121	.35	4
1941	2,255	84	.25	4
1942	1,940	83	.22	4

With reference to the consumption of poisonous meat, there is, however, evidence that the figures do not reflect the true situation.[1] There were 2,684 cases of meat poisoning in 1940 compared with 2,221 in 1941. Deaths due to meat poisoning declined from 84 to 10. It is, however, pointed out that "this favorable status has presumably been influenced by the fact that owing to war conditions all cases of meat poisoning did not come to the knowledge of the authorities." As is pointed out in the article, cases of poisoning caused by meat resulting from forced slaughter (Notschlachtung) have increased in absolute and relative terms.

In German medical literature occasional references can be found to cases of poisoning due to the consumption of poisonous substances in place of fat.[2] Of late, such occurrences seem to have become more numerous. Recently it was pointed out in the German press that oils for technical purposes of all kinds must not be used for the manufacture of food and for cooking. It is stated that they are a serious danger to health and that even the consumption of small quantities of fat mixtures containing technical oils may have serious consequences. People are urged not to use technical oils to prepare food or even to grease baking tins.[3]

In connection with the consumption of poisoned food it is interesting to note that the authorities in 1943 found it necessary to urge against the widespread application of artificial color to foodstuffs.[4] It was pointed out that this practice must be reduced since medical authorities have expressed apprehension of the adverse effects upon the health of the population.

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1 R. Meyer, "Zur Statistik der Fleischvergiftungen im Jahre 1941," Zeitschrift für Fleisch- und Milchhygiene, 15 October 1942, pp. 11 ff. See also R. Meyer, "Zur Statistik der Fleischvergiftungen im Jahre 1940," Zeitschrift für Fleisch- und Milchhygiene 51:301 ff., 318 ff. (1941).

2 F. Humpe, "Vergiftungen durch den Gebrauch eines "Fettersatz"-Stoffes (Orthotrikresylphosphat)," Münchener medizinische Wochenschrift 1942:448.

3 DNB, 30 June 1943.

4 Reichsgesundheitsblatt, 3 February 1943, p. 59.

Cases of food poisoning are not infrequently reported in the press of the German-dominated countries of Europe. However, it is difficult to give statistical evidence of an increase. In the absence of such evidence, it may be pointed out that organized efforts can occasionally be observed, which are designed to reduce the risks resulting from the consumption of dangerous foodstuffs. In April 1943, the Belgian Braille Association felt it its duty to draw attention to the dangers of drinking alcohol or liqueurs, the origin and composition of which are not expressly guaranteed. This association pointed out that cases of blindness had come to its attention which had been caused by the consumption of adulterated liqueurs.[1] Other information from Belgium indicates that it is now permitted to sell certain sugar substitutes which were formerly regarded as injurious.[2]

2. Meat Inspection. The standards governing the inspection of meat have been much relaxed in Germany.[3] According to amendments to the meat-inspection legislation, it is no longer possible to certify meat as inferior merely because of tuberculosis. To certify such meat as inferior, other factors must be present which have resulted in a "considerable decrease of the nutritional value of the meat." This new regulation has stimulated much criticism on the part of veterinarians. It is pointed out that a conscientious veterinarian is now forced to feign the existence of such additional factors (as for example, wateriness) in order to certify meat from tuberculous animals as inferior. Such additional factors rarely are consequences of tuberculosis and the statistical picture resulting from such practices becomes misleading.

In view of these factors and other changes in the legal procedure governing meat inspection, a comparison of tuberculous cattle statistics for the past few years is of limited value. The Swiss press reports that according to German agricultural papers 31 percent of all cattle in Germany are infected with tuberculosis. At the Berlin slaughter houses, the largest of the Reich, seizures (certifications as to conditional suitability) because of fresh tuberculous infection of the blood were:

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1 Le Soir, 6 April 1943.

2 News from Belgium, 22 May 1943, p. 165.

3 Dr. Gürgen, "Die Auswirkung der neuen Tuberkulosebeurteilung in der praktischen Fleischbeschau," Berliner und Münchener tierärztliche Wochenschrift, 29 May 1942, pp. 173 ff.; Heine, "Zur Verwertung des bedingt tauglichen Rindfleisches," Deutsche tierärztliche Wochenschrift 1941:187; E. Schurmann, "Streifzüge durch das neue Reichsfleischbeschaugesetz," Deutsche Schlachthofzeitung 41:315 ff., 329 ff. (1941); F. Schönberg, "Zur Minderwertigkeitserklärung des ganzen Tierkörpers bei ausgedehnter Tuberkulose," Deutsches Tierärzteblatt 8:101 f. (1941); Alexander Cerkownyj, "Zur Fleischbeurteilung tuberkulöser Schlachttiere," Zeitschrift für Fleisch- und Milchhygiene 52:217 ff. (1942); Dr. Scheers-Essen, "Die Beurteilung der Tuberkulose nach dem neuen Fleischbeschaugesetz," Deutsche Schlachthofzeitung, vol. 42, no. 8 (1942).

Year	Confiscations per ten thousand cattle
1939	77.94
1940	19.16
1941	60.33

In the explanation of these figures, reference is made to changes in the law, improved methods of diagnosis, and decreased resistance to tuberculosis owing to difficulties in the supply of fodder. The relaxation of the treatment of such cattle finds its best illustration in the decline of the number of certifications as to inferiority of the meat because of extensive tuberculosis and tuberculosis of the bones. As pointed out before, such certificates are only granted under the new regulations if the meat shows substantial additional deficiencies. The figures (per 10,000 head of cattle, Berlin slaughter houses) are as follows:

Year	Certifications per ten thousand cattle
1939	178.58
1940	127.31
1941	46.4

Taking both sets of figures together, certifications of tuberculous meat declined from 146.47 in 1940 to 106.73 in 1941. While in 1940 76 percent of tuberculous cattle was certified as inferior or conditionally suitable, only 56 percent of tuberculous cattle was so certified in 1941.

In the case of hogs, figures indicating seizure because of acute miliary tuberculosis have increased. Taking the Berlin slaughter houses again, the following number of seizures occurred:

Year	Seizures
average 1935-39	2.09 per 10,000
1940	2.52 " "
1941	6.88 " "

The increase is attributed to better methods of diagnosis as well as to more frequent infections and decreased resistance owing to the lack of albuminous feed and the considerable lengthening of the time of fattening. On the other hand, the total number of seizures of hogs declined from 12.88 in 1940 to 6.88 in 1941 in view of relaxed standards.

3. Control and Inspection of Dairy Products. There is considerable complaint about the quality of milk in Germany. Dr. Leonardo Conti, the chief of the Nazi health organization, has pointed out: "We can clearly notice that the pasteurization of the milk does not sufficiently prevent the bovine tuberculosis of small children.... More strongly than before we must start with the fight against tuberculosis at the cattle itself."[1] Three months later, however, the Reichsgesundheitsblatt published an order providing for the termination of the organized procedure for the fight against

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1 Leonardo Conti, "Die Bedeutung der Wissenschaft, insbesondere der kinderärztlichen, in der Gesundheitsführung," Deutsche medizinische Wochenschrift, 16 January 1942, p. 57.

bovine tuberculosis in its voluntary form.[1] The killing of sick cattle by order of the police is restricted, and the elimination of dairy cattle because of high probability of tuberculosis "will be possible only in extremely rare cases. It is not intended to make any further amendments to these regulations during the war." No wonder that a few months later still a veterinarian complains: "The fight against tuberculosis of cattle has at present in no way advanced far enough to guarantee the population a supply of milk from healthy cows safely free from tuberculosis. Other bacteria, for example typhoid or coli bacteria, may be found in the milk."[2]

Another veterinarian is apprehensive of the danger of technological developments which not always are compatible with the requirements of hygiene. This is especially pointed out with respect to the sterilization of milk.[3] Food also gets spoiled in order to enable the seller to circumvent regulatory measures applying to food in normal conditions. A report from France refers to the case of persons who deliberately treated 18,000 Kg. of cheese until it appeared to have gone mouldy, in order to withdraw it from the ordinary market and to sell it at a high price on the black market.[4]

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1 Reichsgesundheitsblatt, 22 April 1942, p. 332.

2 Dr. Catel, Deutsche tierärztliche Wochenschrift, 9 May 1942, p. 215.

3 K. B. Bruggemann, "Milchwirtschaft und Milchhygiene," Berliner und Münchener tierärztliche Wochenschrift, 16 October 1942, pp. 309 ff.

4 Transocean, 16 January 1943.

III. THE SUPPLY OF MEDICAL FACILITIES

This section treats the supply of medical facilities in Germany and Axis Europe, particularly the decline in quantity and quality of personnel, the deterioration of hospital and recreational-travel facilities, and the relatively tight position with respect to drugs and medical equipment. It should be borne in mind, while reviewing the evidences of the short supply of medical facilities, that the requirements have also risen sharply, as indicated in the previous section.

A. Quantity and Quality of Personnel

1. Declining Number of Doctors. The following table[1] compares the population of various areas of Germany and Axis Europe with the number of doctors theoretically available early in 1942:

Territory	Population (thousands)	Number of doctors
Germany, including Austria, Sudeten territory, Memel, Danzig, incorporated Polish territories, Eupen-Malmedy.....	95,162	76,983
Alsace-Lorraine.....	1,906	717
Luxemburg.....	301	180
Protectorate Bohemia-Moravia	7,700	567
Total.....	105,069	78,447

This tabulation indicates the number of doctors who would be available in peace-time. With the exception of 1,400 young doctors who were called to military service immediately upon the termination of their education, the tabulation gives no indication of the number of doctors who have been absorbed by the armed forces. On the other hand, it includes approximately 7,700 doctors who because of age or for other reasons were not practicing when the census was taken. Thus, 70,747 doctors were available for the medical care of a population of 105,000,000 as well as for medical service with the armed forces.

An estimate of the number of doctors available for the civilian population requires that we first estimate the number of doctors in armed service. The latter may then be subtracted from the total number of physicians, and the difference will be a rough approximation of the number of doctors available for the civilian population.[2]

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1. E. van Kann, "Die Zahl der Aerste 1942 und ein Ruckblick bis 1937," Deutsches Aerzteblatt, 15 September 1942, pp.300 ff.

2. There are about 2,400 medical officers in Army, SS, Police and Labor Service, who are not included in the preceding tabulation, and there are also the 1,400 young doctors who went into the armed forces without ever practising. The rest of the doctors who serve with the armed forces must be estimated.

In the United States the armed forces absorb approximately one fourth, or 45,000, of the 180,500 physicians listed in the American Medical Directory. This leaves 135,500 physicians for a population which, including the members of the armed forces, totals 131,500,000, or, roughly, 1 physician for every 1,000 civilians.

In view of the size of the German military establishment and of the number of casualties, the number of doctors which the German armed forces have taken from the reservoir of doctors available for armed and civilian population must be considerable, and may not fall far short of the number of American doctors serving with the American armed forces. In the light of the reported employment of foreign doctors from the occupied countries, this number may be estimated at between 30,000 and 40,000, but it may easily be higher.[1] On the basis of the minimum estimate of 30,000, this would leave for a total population (including the military) of 105,000,000 a total of 43,000 doctors, while the maximum estimate of 40,000 would leave them with 33,000. This means that, compared with the United States where there is 1 physician for every 1,000 civilians, in Germany there is only 1 doctor for every 2,000 to 3,000 civilians (2,400 to 3,100, if no allowance is made for a reduction of the population by the men in the armed forces).[2]

How does this compare with the ratio of doctors available for the German population in the pre-war era? In 1938 there were roughly 50,000 doctors in Germany proper with its population of 69,000,000. There was thus 1 doctor for every 1,400 people. In other words: while in the pre-war era the ratio of doctors in Germany was considerably less favorable than it is even now in the United States, the situation has deteriorated in war, and is now such that physicians must be under great strain. This is illustrated by a large body of evidence, which, in turn, documents the decline in the quality of the medical personnel.

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1. In the fourth year of the First World War, there were 26,000 doctors with the German Army the strength of which then was 8,000,000. This does not include the medical personnel of the Navy. Sanitätsbericht über das Deutsche Heer im Weltkriege 1914-18, 1934, Vol. 3. The German military forces may now be in the neighborhood of 9,000,000.

2. Estimates of the London Times as reported in the Journal of the American Medical Association 120:855 (14 November 1942) indicate a ratio of 1 doctor for every 12-15,000 people. A ratio of 1 doctor for every 12,000 people is also said to have been calculated by an alleged expert of the Reich Chamber of Medical Practitioners in February 1942 (OSS. CID. 27473, 27 January 1943). A recent article in the Economist ("Germany's Health," 6 February 1943, pp. 180 f.) states that "less than one doctor is, on the average, available for every 10,000 of the civilian population." These estimates may be based upon a number of doctors reduced by those employed by the various organizations providing collectivized medical care. The estimates presented in the text include these physicians.

2. Conditions of Medical Practice. The shortage of medical personnel finds expression in a greater preponderance of women doctors, whose number is 40 percent higher than in 1939, and in the undue proportion of doctors who practice notwithstanding their age. Swedish newspaper reports indicate that there are about 300 doctors aged 80 and over and 3,000 aged 70 and over in practice in Germany.[1] The Hamburger Fremdenblatt cites a 93-year-old eye-specialist, Dr. Karl Hauptmann, who has resumed practice in Kassel as locum tenens for a younger colleague.[2] Dr. Goebbels states that in some parts of the Reich one-third of the normal number of physicians performs more work than the normal complement did in peacetime.[3] Most doctors are said to have twice as many patients as in normal times. One doctor frequently deals with from 100 to 150 patients per day.[4] The situation is well illustrated in intercepted letters from Germany. In a letter from Querscheid, a doctor complains that he has 120 appointments per day.[5] Apart from other work, a surgeon in Linz on the Danube performed 900 operations in six months, including 111 stomach, 26 gall stone, 28 goitre and 300 appendicitis operations.[6] No wounder that Dr. Conti, the Reich Health Leader, has set a lower criterion in assessing health. He states: "These hard times must have their influence on medical advice, too. Peacetime usages must no longer apply today."[7]

In view of the growing scarcity of medical personnel, the authorities have made efforts to relieve physicians from certain routine jobs. The inspection of the state and communal health offices, which normally took place every three years, has been postponed until after the war.[8] Officials are urged to be economical in their requests for medical examinations of the public.[9] Women desirous of marrying a member of the armed forces no longer need a special medical certificate; that certifying to their general physical fitness for marriage suffices.[10] The same rule applies to applicants for marriage loans.[11]

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1. Sydsvenska Dagbladet, 23 May 1943.

2. Hamburger Fremdenblatt, 10 January 1943.

3. Das Reich; quoted in Bern T. (P) 14 January 1943 #307.

4. OSS, CID 27473, 27 January 1943; Das Reich, 21 March 1943.

5. Letter from 10 November 1942, Canadian Postal Censorship, Periodical Diary No. 22.

6. Letter from 19 July 1942, Canadian Postal Censorship, Periodical Diary No. 12.

7. DNB, 22 February 1943.

8. Münchener medizinische Wochenschrift, 13 March 1942, p. 252.

9. Reichsarbeitsblatt, Pt. V, 15 June 1942, p. 323
Reichs gesundheitsblatt, 16 September 1942, p. 673.

10. Münchener medizinische Wochenschrift, 10 April 1942, p. 344.

11. Deutsche medizinische Wochenschrift, 27 February 1942.

3. Collectivization of Medical Services. These measures of rationalization are supplemented by the growing collectivization of medical services. Most important in this respect is the increase in the provision of medical care in factories. The institution of the factory doctor[1], it is pointed out, promotes economy in that workers can obtain medical care in the factory; no time is lost in visiting and waiting for the doctor, and absenteeism, loss of working hours and output are kept at a minimum. On 31 December 1942, a total of 268 full-time and 4,069 part-time "work doctors" were responsible for a total of 5,800 factories. This is chiefly a wartime arrangement. The increase since the outbreak of the war has been 261 full-time and 3,080 part-time work doctors. Part-time work doctors care for about 1,200 workers, while one full-time work doctor is in charge of factories employing from 2,000 to 6,000 workers. Such doctors are especially useful in view of the strain under which the call for increased output places all workers and in the face of increasing employment of women workers and partly disabled persons. The quality of the medical care provided by the work doctors is, however, a poor substitute for that provided by the family physician or, for that matter, the physician of the sick-funds, to which the overwhelming majority of German workers used to have recourse for medical attention. German newspapers praise the "efficiency" of the work doctors and it is said that one such physician handled 25,000 cases in a single year.

Further evidence of the collectivization of medical care and the resulting economy is the large number of doctors employed by numerous public and party organizations.[2] The Nazi state is said to have established 1,100 health offices with 12,600 doctors. Another 1,100 doctors are reported as working for the various labor authorities; another 670 are employed by the German Labor Front. 3,000 doctors attend to the Hitler Youth. Venereal disease and tuberculosis are fought in 1,300 special offices, and the "Mother and Child" organizations have 63,000 advisory agencies. Thus a large proportion of physicians is attached to public or semi-public bodies which provide medical care for collective entities; the number of doctors who remain available for individual medical care may be still smaller than was indicated by the overall ratio of available physicians and population given above.

4. Difficulties in Obtaining Medical Care. Free access to doctors is limited for the population at large and even more so for special unfortunate groups. Persons who approach a physician for medical care without good reason are now punished by the courts on the ground that their action constitutes a public nuisance.[3] Country people are requested in case of illness to go

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1. NDZ, 22 February, 17 April 1943; DNB, 22 February 1943; Leipziger Neueste Nachrichten, 29 November 1942.

2. Journal of the American Medical Association 122:239 (22 May 1943); Das Reich, 4 April 1943. According to another source, German physicians attached to the Labor Front examined 25,000,000 workers. This would indicate a ratio of 1 doctor for every 373,000 workers! Dr. Gobbels, in Das Reich, Bern T. (P) #307, 14 January 1943.

3. Wiener medizinische Wochenschrift, 23 January 1943, p. 76.

first to the district nurse who if necessary will call a doctor.[1] Physicians are ordered not to allow direct contact with patients who have failed to report to the appropriate labor official before consulting a doctor.[2] Some reports indicate that special permissions must be obtained before physicians may be called and that such permissions are granted only to those persons who are valuable to the war effort. Most pitiful is the plight of foreign workers. The Department for People's Health in the Gauleitung Pommern writes:[3] "Poles can only get leave for medical treatment in particularly serious cases. It is not suitable that, in view of the great number of claims made upon our doctors' time, our comrades (Volksgenossen) should give way to Poles. Doctors must not pay unnecessary visits to Poles and thus, as so often happens, withdraw important assistance from Volksgenossen. Every employer must, therefore, know that only in the most urgent cases may doctors be called in for the Poles, and even then are only at his disposal if the doctor has nothing else to do. Poles may not be in the same waiting room as German patients, but must wait apart and (if seen at all) will have special times in the week reserved for them."[4] However, neglect of the health of special groups within the population is bound to affect the health of the population at large, as is illustrated in other parts of this report. The spread of diseases caused by such neglect is of considerable importance, particularly in view of the relative immunity of the neglected part of the population, in this case the Poles, and the greater sensitivity of the remainder.

Doctors now are no longer occupied with tasks which in normal times were regarded as their normal function. An overworked physician proposes to permit nurses and technical assistants to administer intravenous injections and to bleed them, a procedure which normally is frowned upon by the law courts and medical experts.[5] About 75 percent of all childbirths are now attended by midwives unaided by doctors.[6]

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1. Bremer Nachrichten, quoted in Journal of the American Medical Association 119:1440 (22 August 1942.)

2. Berliner Börsenzeitung, 16 February 1943.

3. Ostsee-Zeitung und Stettiner Generalanzeiger, 1 January 1942.

4. In an intercepted letter a doctor from Pomerania writes about the "foreign rabble" he has to deal with: Poles, Lithuanians, Russians, Ukrainians, Czechs, French, Dutch. "Unfortunately," he states, "the German has not learned to wield the well-tried old slave-whip, and spoils the rabble with X-ray examinations, ultraviolet rays, electric cardiograms and similar achievements of modern medicine. I cut things short with two unmistakable gestures: either that of shooting or that of hanging - it works quickly and empties the consultation room better than a vacuum cleaner." OSS, CID 38626.

5. R. Goldhahn, "Dürfen Schwestern und Laborantinnen intravenöse Blutentnahmen und Einspritzungen vornehmen?" Medizinische Welt, 1942, No. 1.

6. DNB, 14 April 1943.

Radiographic examination of the population for tuberculosis has had to be restricted in view of personnel requirements.[1] The rules providing for the exclusive application of X-ray treatment by physicians have had to be relaxed.[2]

5. Future Prospects. There are poor prospects for a speedy relief from the shortage of medical personnel. The educational policies of the Nazi regime fit into the general pattern of preparation for a war of short duration. With all efforts concentrated on this aim, long-term considerations had to be neglected. Correspondingly there occurred a sharp reduction in the number of high school and college students during the 'thirties, illustrating the high valuation which was placed upon presently utilized manpower as compared with a training which would bear fruits only in the more remote future. The present increment of doctors is reported by Nazi authorities as 3,000 per year[3] and this may just suffice to compensate for the natural, regularly occuring decrease.

6. Shortage of Nurses. Among non-professional medical personnel there exists a severe shortage of nurses. According to an order of the Minister of the Interior of 8 July 1942, nurses and technical assistants and sub-assistants are now allocated centrally by the health organization of the Reich to the various institutions and places of employment.[4] The training period has been shortened;[5] however, the Minister of the Interior found it necessary to make representations directed against undue curtailment of training and education in view of war conditions.[6] It is also urged that nurses in hospitals be employed only for jobs which actually require nursing training and experience.[7]

7. Conditions in Other European Countries. The supply of doctors in other parts of Europe has shrunk to a similar extent. There is, first, the claim which Germany has made upon foreign medical personnel and facilities. Doctors in Denmark, Hungary,

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1. Dr. Bullerdiek, "Die Aufgaben des Amtsarztes im Kriege," Medizinische Klinik, 3 July 1942, pp. 635 ff.; Münchener medizinische Wochenschrift, 2 October 1942, p. 860.

2. Wiener klinische Wochenschrift, 18 December 1942, p. 1019.

3. Berliner Börsenzeitung, 25 May 1942.

4. Klinische Wochenschrift, 12 September 1942, p. 828.

5. Frankfurter Zeitung, 16 December 1942.

6. Reichsgesundheitsblatt, 3 June 1942.

7. Klinische Wochenschrift, 5 September 1942, p. 804.

Rumania, Yugoslavia and elsewhere are urged to make their services available for the German armed forces or to transfer their activities to Germany proper. Germany is said to have requested the services of 3,000 Hungarian physicians.[1] French public opinion is much upset by reports that French medical personnel is drafted into German service, this at a time when an estimated 1,200 French physicians are said to be still in Germany as prisoners of war. Germany is reported to have made numerous requests for a list of the staffs of all French hospitals, but up to the end of 1942 they are said to have been ignored.[2] Ukrainian doctors are shipped to Germany to provide medical care for Ukrainian workers employed abroad.[3] In Brussels Belgian doctors are given lectures "enabling them to learn the German medical terminology and to hear about the development of hygiene in Germany."[4] Licenses permitting foreign medical personnel such as dentists, pharmacists, and midwives to work in Germany were obtainable only under great difficulties in pre-war Germany; now they are granted much more liberally.[5]

Certain countries which, under German influence, had engaged upon a policy of racial discrimination in the matter of medical personnel, now amend this policy under the impact of war conditions. There seems to be a sort of "cultural lag" in France where foreign doctors were forbidden to carry on their practices in 1940-41. This regulation does not seem to have been changed under the impact of present needs.[6] In Bulgaria the government has drafted the Jewish physicians for service among the rural population; they are paid by the government, may not engage in private practice and may not become members of the professional organization of Bulgarian doctors.[7] Germany herself has mobilized the services of some Jewish physicians who were still in Germany but were forbidden to practice. They now administer to prisoners of war and have been sent to the aid of the districts affected by typhus fever.[8] In Hungary 300 Jewish doctors were ordered to resume practice.[9]

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1. Journal of the American Medical Association 122:450(12 June 1943).

2. Radio Paris, 12 April 1943; Radio Rennes, 12 July 1943; MEW, #55, 25 February 1943; MEW, # 61, 15 April 1943.

3. NPD, 28 July 1943.

4. Brüsseler Zeitung, 17 October 1942.

5. Reichsgesundheitsblatt, 1 July 1942, p. 494; Münchener medizinische Wochenschrift, 25 September 1942, p. 846.

6. Radio Lyons, 10 June 1943.

7. Munchener medizinische Wochenschrift, 9 October 1942, p. 884.

8. OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 18.

9. OSS, CID 35939, 5 June 1943.

The shortage of doctors is further illustrated by the following information: Bulgaria has curtailed the medical curriculum and admits advanced medical students to practice.[1] In Croatia there are said to be only 1,500 physicians for a population of 6-7,000,000-less doctors then were available in the old Croatia before the First World War.[2] In France there is much complaint about the increase in medical fees; a doctor's visit was reported to cost 800 francs in 1942. Students are said to administer medical care to the inmates of concentration camps. To relieve the strain upon the medical profession the French government has experimented, like Germany, in tighter organization and collectivization of medical services; however, the individualistic spirit of the population and especially among the medical profession has proved an obstacle to such efforts.[3] In Italy there is less complaint about a dwindling supply of doctors than about the difficulties under which their work proceeds in the face of greater demands and lack of medical supplies. For various reasons, the complaints from Hungary are most numerous. The medical curriculum was reduced by one year. Many doctors are on military service; others have been called for work with the Germans. Reports indicating the moderate progress made in some regions to relieve the situation are illustrative of extremely poor conditions. In Koloza county, for example, there were in April 1943, 23 panels with an average of 7,000 persons to each panel-doctor. During an earlier period of the war, there was only one panel-doctor to every 14,000 persons. In other districts, numerous communities are without medical care at all. Many positions normally filled by medical officers seem to be vacant.[4] In Norway the authorities released medical students from compulsory labor since the continuation of their studies was regarded as more important.[5] Finally, there are complaints from Yugoslavia, indicating that the Teslic district and the Miners' Fund Hospital are without a regular physician, while the Domobranstvo physician is occupied with military duties and cannot look after the numerous sick.[6]

In most countries there is a severe shortage of nurses. In some they have been drafted for work in Germany. Complaints to this effect are especially numerous in Norway.[7] Moreover, there seems to have been an exodus among the "Germanic" element in the various European countries for nursing work in Germany.

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1. Neues Wiener Tagblatt, 7 July 1942.

2. Journal of the American Medical Association 118:1382(18 April 1942).

3. OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 63 ff.

4. Journal of the American Medical Association 122:450 (12 June 1943); Reggeli Magyarorszag, 6 April 1943.

5. Svenska Dagbladet, 13 May 1943.

6. Novi List, 16 March 1943.

7. Arvetaren, 22 February 1943; Fritt Folk, 20 October 1942.

Numerous reports indicate the employment of Belgian,[1] Dutch,[2] and Rumanian nurses[3] either in the Reich or with German forces elsewhere in Europe.

8. Decline in the Quality of Medical Personnel. To the deterioration of medical care resulting from the decline in the number of doctors must be added the deterioration of the quality of the medical personnel. Factors responsible for this deterioration can be conveniently summarized under the following headings: elimination of qualified physicians and admission of unqualified physicians. The elimination of some 10,000 Jewish doctors has deprived the German medical profession of some of its best talent, while, on the other hand, the educational and ethical standards of the profession have been gradually lowered. To consider only war measures proper: after the outbreak of hostilities in 1939 no less than 5,337 medical students, a number equal to 10 percent of the doctors then available, were prematurely admitted to practice without having to serve their year of hospital interneship.[4] At about the same time the medical curriculum was reduced from eleven to ten semesters, the time required for taking the state examinations was drastically curtailed, and the year of hospital interneship, which previously had to be served immediately after the state examination, was incorporated into the undergraduate schedule. The total reduction of the medical curriculum brought about by these measures has been estimated at two years. Subsequently the education of university students in general was further curtailed by introducing the trimester in place of the semester, seeking to accomplish in two years what was formerly done in three. It was then that the Berlin correspondent of the American Medical Association expressed his opinion that "the German medical curriculum is perhaps now shorter than that of any other country in the world."[5]

With the progress of the war, educational standards have continued to decline. A decree of the Minister of the Interior, referring to the re-examination of students who had failed to pass the examination the first time, urged the "consideration of conditions imposed by the war."[6]

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1. Vooruit, 7 February 1943; Volk en Staat, 21 July 1943; Le Pays Reel, 6 April 1943; Transocean, 29 March, 5 April 1943.

2. Algemeen Handelsblad, 3 November 1942; Deutsche Zeitung in den Niederlanden, 8 March 1943.

3. Universul, 13 September 1942.

4. E. van Kann, "Die Zahl der Aerzte 1942 und ein Rückblick bis 1937," Deutsches Aerzteblatt, 15 September 1942, pp. 300 ff.

5. Journal of the American Medical Association 112:401 (1939); 113:2165 (9 December 1939); 113:1977 (25 November 1939); 114:675 (24 February 1940); 114:1385 (6 April 1940); 114:675 (24 February 1940).

6. Klinische Wochenschrift, 7 March 1942, p. 240.

Another attempt at replenishing the medical profession with unsuitable material was undertaken in the spring of 1940, when a decree granted an amnesty to doctors, dentists, veterinary officers, and pharmacists who had been convicted for certain professional offenses committed before 1 September 1939. For doctors, the amnesty included the temporary or permanent prohibition of practice, except in cases where the doctor had been found "unworthy of exercising the healing art."[1]

Reference must also be made to the many favors which the regime has bestowed upon the so-called nature healers, a sort of quack whose professional activities were placed upon a legal basis in 1939. Since their number is in excess of 12,000, the harm which can be done by these people in the face of a dwindling supply of regular physicans must not be underrated.

Still another sympton of the qualitative decline in the medical profession is the new intellectual orientation of a Nazi character and certain self-imposed limitations on medical authorities. Since October 1939, theses required to obtain the title Doctor of Medicine must be submitted to a commission of the Party if they deal with subjects related to the direction, history, or organization of the National-Socialist movement. Moreover, Jewish authors may be quoted only "if that is absolutely necessary for scientific exactitude; in such cases the fact that non-Aryans are quoted must always be specified and their works must be placed in a special category in the index of authors cited."[2]

Moreover, the general conditions under which the work of the physician proceeds are not conducive to efficiency or individualized attention and care. All official statements and promises to the contrary, the physician has become a public functionary with the attributes, standards, and predilections of a civil servant. This trend, which was ushered in during the 'twenties and 'thirties, has been enormously intensified during the war. In 1943 members of the health services were ordered to wear insignia as follows:[3]

Physicians: the life rune in red;
Dental surgeons: the life rune with a "Z" (Zahnarzt) in red;
Veterinary surgeons: the serpent in red;
Pharmacists: the familiar "A" (Apotheker) in red;
Midwives: the life rune with an "H" (Hebamme) in red;
Dentists: the life rune with a "D" (Dentist) in black;
Health practitioners organized in the Federation of German Health Practitioners: the rune of this Federation in black;
Druggists: the druggists' insignia in red.

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1. Bulletin of Hygiene 16:432 (1941)

2. Bulletin of Hygiene 16:433 (1941)

3. NDZ, 18 February 1943.

The jobs of doctors and dentists in Germany are frozen in that no doctor or dentist may take up a new practice, change his employment, or terminate his professional activity without the consent of the authorities.[1] Moreover, the latter may compulsorily assign him to a different locality and to a new position if the conditions require such action.[2]

There has been a considerable decline in the standing of the medical profession in the countries under German yoke. In Athens, the Medical Society had been forced by circumstances, among which the inflation of the drachma seems outstanding, to permit its members to accept payment in kind, an action for which it was reprimanded by the Minister of Health.[3] In Prague a physician was taken into "protective custody" because he certified that a worker "who was known for laziness" could not work "although he was perfectly aware that the worker was in good health."[4]

9. Dentists. Many of the remarks pertaining to physicians apply to dentists as well. While defective teeth have first rank among the various medical defects of the working population,[5] dentists are restrained in the application of their care. They are instructed only to make up dentures if a certain number of teeth are missing and if chewing is considerably impeded. Artificial teeth to remedy faults in appearance are strictly forbidden, and dentists have no time for other than absolutely essential treatment.[6] At the same time, weakness and emaciation of the patients have made the dentists' work more difficult. An inhabitant of Wuppertal-Elberfeld complains in an intercepted letter: "I am suffering from tooth-ache, my wisdom teeth are troubling me but no one wants to extract them as it is a small operation and they told me our bodies were no longer able to produce the necessary substances to make the socket holes close up again..."[7]

At the same time dentists are kept busy with tasks which are regarded to be of military importance. In the spring of 1943, an order was issued urging that the teeth of all male juveniles

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1. Münchener medizinische Wochenschrift, 31 July 1942, p. 694; Reichsgesundheitsblatt, 1942, p. 612

2. Bulletin of Hygiene 16:433 (1941); Reichsgesundheitsblatt, 16 September p. 676; NDZ 16 September 1942 (dentists).

3. Medizinische Klinik, 6 November 1942, p.1080.

4. Der neue Tag, 8 May 1943.

5. Herbert Pirker, "Leistungsmedizinisches Denken in der ärztlichen Praxis," Wiener klinische Wochenschrift, 14 August 1942, pp. 641 ff.

6. MEW Weekly Propaganda Extract No. 77, 24 July 1943; OSS, Bern (P) #4270, 19 July 1943.

7. PW/MEF/93493/43, 6 May 1943.

must be put in order according to age groups, so that their teeth are in good condition when they are called for the Labor Service or the armed forces. Actually, only the age 1927 group was ordered to see a dentist and to undergo dental treatment if necessary. All dentists are under obligation to give such treatment. The Reich Leader of Dental Surgeons and the Reich Leader of Dentists especially emphasize that these boys must be given preferential treatment before all other patients because of the military importance of this age group.[1]

B. Quantity and Quality of Facilities

1. Hospitals. German hospital facilities are seriously short since so large a proportion of these facilities has been placed at the disposal of the armed forces. While the quality of German hospital facilities had a great reputation in pre-war years, there were indications of a growing shortage as early as the thirties. On the whole, however, Germany enjoyed a rather favorable ratio of hospital beds to population compared with other countries. According to a number of calculations, the exactness of which it is impossible to ascertain in all cases, the ratio of hospital beds per 1,000 people is as follows in the various countries:[2]

Country	Beds per thousand people
United States	10
Germany	8.8
Norway	8.5
Netherlands	7.5
Czechoslovakia	6
Belgium and Luxembourg	4.5
Italy	4
France	3
Greece	2
Poland	2
Yugoslavia	2

At the end of 1939 there were 4,861 hospitals in Germany (including Memel territory and Ostmark; excluding Saar, Sudeten territory and incorporated former Polish territories).[3] Of these, 2,267 were public, 1,519 free charitable, and 1,075 private hospitals. The number of beds was 662,996, compared with 686,459 at the end of 1938. This decline was due to the taking over of some hospitals by the armed forces. Of these, 65 percent were in public, 29 percent in free charitable, and 6 percent in private hospitals. They were used during 1939 by 6,413,340 persons.

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1. NDZ, 20 April 1943; Frankfurter Zeitung, 22 April 1943; Völkischer Beobachter, 23 April 1943.

2. Inter-Allied Committee on Post-War Requirements, Report to Allied Governments, Appendix II, Allied Minimum Imports Programme, 1943, p. 110. Civil Affairs Handbook on Italy, Section 13, On Public Health and Sanitation, 1943, p. 19.

3. "Die Krankenanstalten im Jahre 1939," Wirtschaft und Statistik 21:453(December 1941)

The average number of days during which hospital beds were in use increased as follows:

Year	Number of days	Utilization as Percent as maximum use
1936	290.9	79.5
1937	296.2	81.1
1938	305.0	83.6
1939	316.5	86.7

While available facilities increased, the number of patients increased at a higher rate. With the outbreak of the war conditions grew much worse. Though new facilities in schools, etc., were made available, the access of civilians to hospital facilities was necessarily curtailed and standards of hospital care had to be lowered. As in the field of public health in general, measures of rationalization and collectivization which are designed to economize the available facilities were undertaken.[1] For example, in the city of Munich the facilities of 22 hospitals were pooled in December 1942; the hospitals so organized accept only patients assigned to them by a central bureau at the city health office.[2]

In general, hospitalization has been much restricted. As early as 1939, hospitals were ordered to reduce the number of maternity cases and to advise patients to lie in at home under the care of a midwife.[3] In view of the difficulty of obtaining medical attendance, refusal of hospitalization often spells refusal of medical care. Doctors now attend only 25 percent of all childbirths.[4]

The extent of the crowded conditions is illustrated by the greatly increased time lag in admission to hospitals and sanitoria. A German doctor complains that "the creation of new sanitoria beds in the last few years has in no way been increased in accordance with the improved methods of recognizing tuberculosis." He states that the patients who in previous years had to wait 2 to 3 weeks must now remain without hospitalization for a period ranging from 3 to 4 months.[5]

The absorption of hospital facilities by the armed forces seems to have progressed farther in certain cities than in others. Reports indicate that Vienna, Munich and Breslau have become centers of such activity.[6] It is also said that 170,000 German

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1. OSS, CID, Censor Materials Summary #27, 1 May 1943, pp.19, 25-27.

2. Wiener medizinische Wochenschrift, 16 January 1943, p. 56.

3. Bulletin of Hygiene 16:433 (1941).

4. DNB, 14 April 1943.

5. Dr. Ickert, "Die Betreuung der Tuberkulösen während der Wartezeit bis zur Einberufung in die Heilstätte," Deutsches Aerzteblatt, 15 September 1942, pp. 299 ff.

6. Nya Dagligt Allehanda, 27 April 1943; Magyar Nemzet, 5 May 1943.

wounded are nursed in Hungary, but the Hungarian authorities have denied this.[1] There have also been reports of the evacuation of hospitals in Bohemia-Moravia to make room for wounded from the Eastern front.[2]

Complaints about the deterioration of hospital care are numerous. There are said to be premature discharges, patients in excess of hospital beds, and inclination to resort to amputations, lack of sufficient medical and nursing personnel, and poor food. Furthermore, the lack of equipment has caused a deterioration of hygienic standards and medical care. Linen is short and bed sheets are not changed so often as before; there is lack of gauze for bandages and surgical laundry is sharply economized. (Specific shortages are more fully discussed in the section of this report dealing with medical equipment.)

There is much evidence that hospital conditions, in absolute terms, are in a state of even greater deterioration in the German-dominated countries. People in France are said to be eager to enter hospitals in order to relieve their domestic shortage of fuel and food. However, waiting lists have been established in Paris and admission takes one or two months.[3] On the other hand, there is evidence that food conditions in hospitals may be poor, and some people are said to be unwilling to go to hospitals where they have to surrender their food cards. Interminable formalities are said to be required to have them returned on leaving the hospital. It has also been reported that the director of the sanitorium for the French clergy turned to the Italian clergy for food shipments without which the patients would have had to be discharged. It is also reported that in sanitoria providing for patients affected with tuberculosis the large-scale dismissal of patients is considered since the latter cannot be provided with sufficient food as required by the change in climatic conditions.

All Paris hospitals are said to suffer from enormous transportation difficulties. There are only a few ambulances, and patients are brought to the hospital by the police first-aid. For the return journey patients are carried in a group ambulance and dropped at their respective destinations.

In the same city, the German authorities have requisitioned the Beaujon, Lariboisiere and La Pitie hospitals with a total of 3,280 beds. Thanks to temporary hospitals, however, Paris still has 36,800 beds for a population estimated at 4,200,000.[4] Elsewhere in France it has become necessary to open to paying patients hospitals and almshouses (hospices) which were formerly reserved for the needy; it is not clear where the poor will now be accommodated.[5]

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1. DNB, 9 June 1943.
2. Radio Maroc, 25 January 1943.
3. Paris Soir, 12, 16 February 1943.
4. Curieux Marcellin, 6 November 1942.
5. Radio Paris, 21 April 1943.

From Italy it is reported that "a great number of people refuse to enter hospitals because they are so badly fed there."[1] The lack of accommodations seems to be worst in Norway, where patients have been turned out of hospitals. Because of large-scale requisitioning of facilities by the Germans, increasing use has been made of makeshift arrangements in schools and similar places.[2] Since so many facilities have been seized by the Germans, hospitals are very crowded and beds have been placed in conference rooms and corridors. At the Oslo Public Hospital (Ullevål) the second section has now 183 beds compared to the normal number of 168; the third section has 224 beds as compared to its normal number of 188. In Trondheim, a city of 60,000 inhabitants, whose hospitals take care of the surrounding districts with 200,000 inhabitants, there used to be three hospitals with 750 beds. At present, only 350 beds are available for the Norwegian population. The largest hospital had to be moved and its different sections are now located at four different places, in former old people's homes and similar buildings around the city. The demand for beds is very large and the length of time a patient spends in bed has been decreased. One patient operated on for appendicitis is said to have had to get up after two days in bed.[3] Scarlatina patients are no longer received by hospitals in Oslo. They must be isolated at home. It is stressed that this provision applies to Norwegian workers on German constructions. If the German authorities order Norwegian workers infected by scarlatina to be removed, they must be sent home immediately, even if their home is located in another province. This, in turn, facilitates the spread of diseases elsewhere.[4] Hospital conditions are so bad that the Swedish and Danish Red Cross have made arrangements for the establishment of facilities in Norway. The Swedish Red Cross plans the founding of a hospital for about 150 Norwegian civilians near Oslo,[5] while the Danish Red Cross intends to furnish a hospital with 100 beds.[6]

2. Recreational Travel and Spas. Facilities in spas and watering places have likewise been seriously curtailed, as has all sorts of travel for reasons of health. The spas of Piest' any and Pyrmont seem to be reserved for wounded soldiers, and so are many facilities in Baden-Baden, Wildbad, and other resorts.[7]

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1. OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 43.

2. Svenska Dagbladet 6 July 1942; 10 April 1943; Nya Dagligt Allehanda, 4 February 1943.

3. CID 41102, 27 July 1943 (Report of a Swedish Labor Union Leader from a visit in Norway).

4. Dagens Nyheter, 21 July 1943.

5. Stockholms Tidningen, 23 August 1943.

6. Aftontidningen, 10 August 1943.

7. Berliner Börsenzeitung, 9 August 1942; Slovak, 26 May 1943.

There are no facilities for the foreign travel of sick persons except those suffering from tuberculosis and rheumatism. The latter may apply to central agencies and be assigned to a foreign sanitorium in case of urgent need.[1]

Recreational travel is rationed in that persons desirous of obtaining admission to hotels, etc., must present their clothing ration card, upon which the trip is entered. Exceptions are made for mothers with children up to three years, pregnant women, persons who have been exposed to bomb damage, and sickly people from regions especially exposed to air raids. In these cases certificates issued by the public or party authorities must be presented.[2]

According to a decree of 9 January 1943, reservations for hotel and related facilities were accepted, provided that the facilities would not be needed for a front soldier on furlough or other person requiring preferential treatment. In the case of such need, the reservation could be invalidated, but not later than two weeks before the first day of the planned vacation. Thus it could be expected that hotel facilities would be available if no information to the contrary was received two weeks before the start of the vacation. In July 1943, these arrangements had to be changed in view of the dispersion of the population due to air raids and the requirements of persons de-housed by bombing.[3] Since that time the availability of facilities for which reservation has been made and accepted can no longer be taken for granted. People are requested to make inquiry with the hotel shortly before leaving for the vacation.

A medical certificate to be issued on a special form which sets up strict requirements is needed for all spas in the narrower sense of the term. Holders of such certificates are entitled to preferred treatment and obtain facilities in preference to other persons.[4]

While recreational travel is thus not facilitated on the supply side, the restrictions on the vacations of employees which were introduced after the outbreak of the war have been lifted, and rationalization and collectivization have made as much headway as in other fields of public health. Collective travel is required for recreational purposes, and is sponsored by the Labor Front, the Reich Health Insurance Organization and other agencies. In addition, the tax authorities encourage the granting of contributions on the part of the employers for vacation purposes by exempting such payments from the income and wage tax. The vacation leave in private industry for 1943 was set at a maximum of fourteen days for workers born after 1 April 1894, and at a maximum of twenty days for workers born before that time. The determination of the leave periods does not imply that leaves actually will be taken. Early in 1943 it was announced that leaves for 1942 which had not been taken would not be forfeited until 1 October 1943.[5]

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1. Reichsgesundheitsblatt, 17 June 1942, p. 462.

2. Frankfurter Zeitung, 11 March 1943.

3. Frankfurter Zeitung 31, July 1943.

4. Frankfurter Zeitung, 11 March 1943.

5. Völkischer Beobachter, 1, 24 April 1943; Der Deutsche Volkswirt, 2 October 1942.

In 1943 arrangements were made for vacations of the "Ostarbeiter," i.e., workers from Poland or Russia.[1] Though the regulations are vague in that they only state the possibility of a vacation leave for these people, the measure itself seems to be indicative of a progressive deterioration of health among the concerned groups. The regulations provide that Russian or Polish workers may be given a paid vacation of one week in Germany if they are in the second year of employment and if they have proved efficient and loyal. Special vacation camps are to be established for them. In the third or fourth year of employment they may be sent home every year for two weeks plus travel time. The fare to the boundary is paid by the employer, while the Reich contributes the fare from the boundary to the home town. The extent to which these potentialities are being transformed into actualities is not certain. The health of the workers may be such that the maintenance of their working power makes vacations imperative and that they are therefore actually given vacations.

3. Drugs and Medical Equipment. a. The General Situation. Shortages of drugs in various European countries are due to the cessation of imports of various materials and to economies in manpower and other resources required by the war. In spite of the shortage of packing material, bottles, and similar articles, there is still much inter-continental trade. This fact is not surprising in view of the size of the German production of drugs. Germany was the leading exporter of medicinal preparations in the world, and its share in world trade in these articles used to be between 33 and 39 percent. France had third rank among the exporters of drugs, exceeded only by the United Kingdom. It is thus understandable that the drug situation in Europe is by no means extremely serious apart from certain specialties, the lack of which will be felt only by a relatively few people.[2]

Excessive hoarding of medicaments has occurred everywhere and prices have gone up substantially. Shortages occur even in neutral countries: the Swiss pharmacists' journal contains a section devoted to the barter of scarce products. Germany is reported to have increased her stocks substantially from materials captured at Dunkirk. These stocks are said to be so large that they are still in use. There has been much standardization of drugs and the introduction of new preparations has been stopped.[3] Advertising has been severely restricted.[4] Many drugs are sold only by prescription.[5] If a prescription cannot be supplied, the druggist may, within certain limitations, substitute another preparation for it.[6] Containers must generally be returned.

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1. Frankfurter Zeitung, 2 August 1943.

2. G. Banzer, "Arzneiversorgung im Kriege," Deutsche medizinische Wochenschrift, 1942, No. 10.

3. Frankfurter Zeitung, 21 February 1943.

4. Gerhard Kärber, "Die Neuregelung der Werbung auf dem Gebiete des Heilwesens," Die Ernährung 7:136 ff. (1942); Reichsgesundheitsblatt, 17 June 1942, p. 467; Klinische Wochenschrift, 1942, pp. 120, 784.

5. Wiener klinische Wochenschrift, 24 April 1942, p. 336

6. Reichsgesundheitsblatt, 1 November 1941, p. 3; Wiener medizinische Wochenschrift, 19 January 1943.

In Germany, statements of the authorities are generally reassuring. The situation is, however, well illustrated in a circular issued by the surgeon of the 334th Infantry Regiment on 2 March 1943. This unit was then in North Africa, but there were no specific transportation difficulties. The circular reads as follows: "All physicians are directed to apply the greatest economy in the use of bandages and medicaments. Bandages must be washed and reused. This applies especially to elastic bandages. If new elastic bandages are requisitioned, the old ones must be turned in. Under no conditions may splints be thrown away: the padding is to be removed and the splints used again. Gauze and cotton wool must also be used very economically, and the greatest economy is required in the use of adhesive tape. Owing to the tight raw material situation, we have the greatest difficulties in obtaining these supplies. Often it suffices to use adhesive tape half the width of the roll. Drugs of any kind may be given only in really urgent cases. Only as much is to be dispensed as is actually used by the men. Under no conditions should soldiers be allowed to carry with them drugs prescribed some time in the past."[1]

The Frankfurter Zeitung, in the summer of 1942, dealt with the shortage of medicines in a generally reassuring article.[2] "But even so, certain tensions are inevitable," the paper admits, "and it cannot be denied that we shall have to adapt ourselves in certain ways, in some cases accept substitutes, and make the sale of more preparations subject to a doctor's prescription." As the article points out, laxatives are especially in short supply owing to the cessation of imports of raw materials. Constipation may also have increased owing to dietary conditions. There is, furthermore, the factor of increased purchasing power as well as the desire of the population to buy invigorating drugs and vitamin preparations. As the paper states, the increased demand for sedatives and barbiturates "borders on addiction." At about the same time, Das Reich discussed conditions in one large Berlin chemist's shop.[3] When the shop opens after the lunch hour at 3 p.m., there is a queue of 30 people and a similar number are waiting until the shop closes. Only a small proportion of the prospective customers have prescriptions. They ask for anodynes, grape-sugar preparations, malt preparations, tonics, vitamin preparations etc., which they think will make up for "imaginary" shortcomings of nutrition or compensate the actual or imaginary consequences of some affliction caused by the present conditions. Many of the articles are not available. If by chance some food preparation can be had in limited quantity, customers return two or three times in order to hoard the precious article. Of the 3,000 people who visit the shop every day, only 1,000 actually buy. The average turnover of the shop has more than doubled. This has happened in the face of a decline in personnel. Instead of six dispensers there are now only two.

The production of medicinal herbs has been greatly stimulated in Europe owing to the shortage of various drugs. The collection of these plants is organized by the authorities in

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1. In files of OSS library.

2. Journal of the American Medical Association 119:1440 22. August 1942.

3. 13 September 1942.

many localities and the cultivated areas have generally increased. Exports from certain countries, such as Bulgaria, have risen to a considerable extent.

The following is a more detailed survey of various medicinal articles which are in short supply. Soap, vitamins, anti-typhus and other vaccines are dealt with elsewhere in this report.

b. Cosmetics. A decree of 30 July 1942, limited the manufacture of cosmetics to those enterprises which had continuously been in business since 1938.[1] Early in 1943 the production of perfumes, cosmetics, artificial brine, salts, bath salts and other bath accessories was prohibited altogether.[2]

c. Medical Equipment. There are numerous complaints about the decline in the quality of surgical instruments and the tight supply situation.[3] It is reported to be difficult even to have surgical instruments sharpened. In order to economize in steel, only the blades of surgical instruments are now said to be made of that metal the remainder being made from aluminum. Italy is reported to use a new chromium-plated plastic instead of steel. The substitute has proved unsatisfactory, as it discolors easily and rusts after the instruments have been boiled. In view of the general shortage it is not surprising that in June 1943, the production of medical instruments in Germany was ordered to be maintained. Industries engaged in this branch of manufacture are forbidden to lower their output by accepting orders outside their field, even orders for military untensils.[4]

Concerning electrical medical equipment, Swiss importers complain about the quality of small electrical bulbs for surgical instruments and of X-ray tubes. They are obtainable only with great difficulty in Germany and do not last nearly so long as before the war.[5] In 1942 enterprises producing electrical medical equipment were instructed by the authorities concerning priorities in the use of their capacity. Repair and maintenance hold the first rank and are followed by replacements. New installations are to be made only if they do not exclusively serve a regular peacetime need but are capable of being fully utilized in wartime also.[6] In July 1943, all

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1. Reichsgesundheitsblatt, 14 October 1942, p. 749.

2. Bern T. (P)#1838, 22 March 1943.

3. OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 29, 43, 81.

4. Münchener neueste Nachrichten, 26-27 June 1943.

5. OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 81.

6. Klinische Wochenschrift, 10 October 1942, p. 916.

doctors, dental surgeons, dentists and healers using X-ray equipment were required to register it with the authorities of the Reich Defense Commissary. Manufacturers and dealers were exempted from this order. Subsequent changes in the possession of the equipment also had to be reported. This measure is indicative of a growing shortage of such equipment and shows that the authorities were preparing themselves for the allocation of available installations according to the most urgent need. The order expressly pointed out that equipment and X-ray tubes which were not in current use were also to be reported.[1]

The supply of optical implements seems to have been curtailed, though some supplies of optical goods are still available for export. It was reported in April 1943 that Bulgaria is to receive optical instruments and apparatus to the total value of 22 million levas for the observatory at the Sofia University.[2] (No air-raid damage seems to have been inflicted on the Zeiss Works in Wetzlar as yet.)

There has been much standardization in the field of medical glass articles and more bottles are recovered now than in the past. Many articles of tubular and flat glass are no longer produced.[3] The size of the paper labels on bottles has been reduced to save paper.[4] A circular of the health authorities published in May 1942, mentions that the procurement of glass articles required by the veterinary authorities has been difficult for some time.[5]

Rubber gloves are no longer available in Italy, where surgeons use cotton gloves for operations. Switzerland is said to be in the possession of a sizable stock of American rubber gloves. Germany uses gloves made from synthetic rubber. These gloves are inferior in that they cannot be exposed to paraffin, fat, or alcohol; they tend to stick and are not uniformly elastic. They are, however, more resistant to benzine than rubber gloves.[6]

Paper bandages of low quality are widely used. In view of the shortage of adhesive plaster, bandages are occasionally fastened directly to the skin by glue. Army surgeons are requested to economize in adhesive tape, using if possible only half of the normal width by cutting the tape into two parts. Cotton wool and gauze are very scarce and bandages have to be washed and reused. Paper bedsheets have replaced linen in military hospitals. Sheets can thus be changed more often.[7]

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1. Frankfurter Zeitung, 2 August 1943.

2. Nachrichten für den Aussenhandel, 28 April 1943.

3. Reichsgesundheitsblatt, 14 October 1942, p. 750.

4. Stuttgarter N.S.Kurier, 2 July 1943.

5. Reichsgesundheitsblatt, 27 May 1943, p. 421.

6. E. Bolland, "Wie erhalte ich mein Instrumentarium lange Zeit gebrauchsfertig?" Wiener klinische Wochenschrift, 31 July 1942, pp. 609 f.; OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 43,81.

7. OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 28, 43, 66, 81.

Artificial teeth are now said to be made from rosin, as porcelain factories are working for the armament industry.[1]

d. Drugs Acting Locally on the Skin and Mucous Membranes.

i. Glycerin. For medical purposes, glycerin is used as a protective coating of irritated or abraded tissue (demulcent) or as an agent for softening the skin (emollient). Besides medical uses, there are numerous other civilian uses of glycerin. In wartime, however, this preparation goes into the manufacture of nitroglycerin, dynamite, cordite, and other explosives. It is thus understandable that shortages of medicinal glycerin are reported from Germany and that none is said to be available in Bulgaria.[2] Though glycerin is extensively employed as a vehicle for many drugs applied to the skin, it is not a preparation to which extreme importance can be attributed.

ii. Tragacanth.[3] Gum tragacanth is the dried gummy exudation of a shrub which grows in Asia Minor, Iran, and British India. This gum is used for industrial, medicinal and confectionery purposes. Medicinally it serves as a demulcent in pharmaceutical preparations, as an emulsifier and excipient for pills as well as a base for skin medications. At present Germany has to satisfy her requirements for tragacanth entirely from stocks and from the small quantities which she can import from Turkey. The stockpile must have been considerable in view of greatly increased imports during the late thirties compared with earlier years. In metric tons, German imports of "Tragantgummi" were as follows:

	1926	1929	1930	1936	1937	1938
Imports	574	950	1,062	2,055	1,587	1,401
Exports	252	250	311	280	380	243
Apparent consumption	322	700	751	1,775	1,207	1,158

The bulk of German pre-war imports came from British India which supplied about 70 percent; the rest from Iran and Turkey. Germany has continuously shown interest in supplies from Turkey and has been successful in obtaining this commodity under the various Clodius agreements. Annual Turkish production however, is only in the neighborhood of 200 tons. Judging from the second Clodius agreement of October 1941, Germany was interested in buying tragacanth up to the amount of Lt 100,000. This would represent an amount estimated slightly in excess of 200 tons.

Satisfactory substitutes for tragacanth are other gums, starches, and pectin, which can be produced from sugar beets, other vegetable roots, and tree barks. Basic materials for these substitutes are plentiful in practically all countries but require expenditures in equipment and labor to produce commercial quantities. Deficiencies of tragacanth in Germany thus entail additional employment of scarce resources.

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1. Sydsvenska, 20 July 1943.

2. Reichsgesundheitsblatt, 20 January 1943; OSS, CID, Censor Materials Summary 27, 1 May 1943, p. 96.

3. BEW, Axis Supplies of Tragacanth, 21 August 1942; files of U.S. Department of Commerce.

iii. Cocoa Butter. Cocoa butter is a vegetable oil product which acts as emollient. Germany now has to rely on stored supplies. Under storage conditions the acidity of cocoa butter increases. New pharmaceutic regulations issued by the German authorities permit the use of such butter in modification of the standard of the pharmacopoeia. A substitute product, postonal, which is created by the polymerization of ethyls, is widely used.[1]

iv. Lanolin and Vaseline. Lanolin and vaseline are used for their local action on the skin. Lanolin is extracted wool fat, while vaseline is solid petrolatum. Petrolatum is a common ointment base and is also employed as an emollient and lubricant. Shortage of vaseline or lanolin is reported from Germany, Italy, Holland, Belgium, and Bulgaria. A German substitute material is composed of paraffine and synthetic hydrocarbon of the modern fuel industry. In Germany, white vaseline may only be used for preparations for eye treatment.[2]

v. Lard. Lard as a foundation for ointments has been replaced by hardened walnut oil and oils obtained from the seeds of fir and pine cones.

e. Germicides. i. Borates. Over 90 percent of the world supply of boron materials is produced in the United States. Boric acid is used as a germicide and mild disinfectant in medical practice but can be replaced by numerous substitutes. Germany curtailed the use of boron derivatives as early as in 1939.[3] It is not believed that this was accompanied by adverse effects upon health.

ii. Chlorine. Chlorine arrests putrefaction and destroys the accompanying odors. Apart from other medical uses, it is of great value as a sterilizer of water. Though Germany has supplies of this material, the need for it is believed to have increased markedly owing to war requirements and air-raid damage. In the summer of 1943 it was reported that Germany had made attempts to obtain chlorine from Sweden. These attempts seem to have been unsuccessful. It is believed that British bombings of German chlorine factories have caused some damage.[4] It has been estimated that German Europe uses about 15,000 metric tons of chlorine for water purification.

iii. Cresol. There are indications of a shortage of this disinfectant in Germany.

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1. Reichsgesundheitsblatt, 20 January 1943; Journal of the American Medical Association 114:69 (6 January 1940).

2. Walter Kern and Theodor Cordes, "Untersuchungen über Handelsvaselinen," Archiv für Pharmazie, 18 January 1943, pp. 23 ff.; Reichsgesundheitsblatt, 20 January 1943; Bulletin de l'ordre des pharmaciens, 7 March 1943; OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 43, 96.

3. Bulletin of Hygiene 16:432 (1941).

4. Social Demokraten, 16 August 1943.

iv. Iodine. Iodine is one of the oldest of the various antiseptics and is widely employed owing to its efficiency and economy. The bulk of the world supply of iodine is a by-product of the nitrate industry in Chile. Of continental-European countries, France and Norway used to contribute relatively small amounts to the world output. Germany used to depend on foreign sources for all of its iodine requirements. Though waste iodine from all possible sources is being recovered, most of this is employed principally for industrial purposes, especially photography. Medical consumption of iodine is much restricted and various substitutes have been developed, including a new bromine preparation. In view of the availability of so large a number of highly efficient substitutes, including mercurochrome, the situation is far from serious.[1]

In greater detail, the economy measures introduced in Germany include the following:[2] In December 1939, the iodine content of tincture of iodine was reduced to an amount not in excess of 5 percent. Wholesale druggists were required to report their stocks. Pharmacists were instructed to use iodine and its compounds only on medical prescriptions, and each prescription was made valid for one purchase only. If a doctor required the 10-percent tincture of iodine of the pharmacopoeia, he had to indicate this on the prescription.

It is likely that the supply situation subsequently improved, since the requirement of a prescription for purchases was lifted.[3] This may have resulted from the receipt of French stock. Concerning other European countries, reports from Belgium, Hungary, and Italy indicate that no iodine is available there.[4] Switzerland has gradually replaced it by the various substitutes which are available.[5] In the Netherlands, the iodization of the drinking water, usual in various localities, had to be terminated. In its place, an iodization of bread was to take place.[6]

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1. H. Krüger-Martins, "Hautdesinfektion im Kriege," Medizinische Klinik, 1941, p. 1082.

2. Bulletin of Hygiene 16:432 (1941)

3. Gerhard Karber, "Neurgelung der Werbung auf dem Gebiete des Heilswesens," Die Ernährung, Vol.7, 1942, p. 139.

4. OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 29, 43, 81, 96; Bulletin de l'ordre des pharmaciens, 21 March 1943, p. 88.

5. "Succedanés de la teinture d'iode," Bulletin du service fédéral de l'hygiene publique, June 1942.

6. Medizinische Klinik, 5 June 1942, p. 552.

Recent reports from Italy indicate that the Salsomaggiore Hot Springs, Italy's chief source of mineral iodine, have become sanded up because of lack of cleansing. Two new wells are being bored, which must go to a depth of not less than 1,000 metres before suitable hot springs can be reached.[1]

f. Drugs Used in the Therapy of Syphilis. i. Bismuth is of value in the treatment of syphilis and for other medical purposes. The bulk of world output is produced in the United States and Latin America. Of the European countries, Spain, Yugoslavia, Sweden, Belgium, France, and Germany produced relatively small amounts. Since the war, Germany and Italy have probably obtained small supplies of bismuth from Spain and Sweden, and the fall of France may have yielded some larger stocks of the metal. Control over Yugoslavia gave Germany the Trepca lead mines and their by-product bismuth. Intercepted material indicates that there are shortages of bismuth in France, Norway and the Netherlands.[2]

ii. Arsenic. Arsphenamine, popularly called "606", is said to be difficult to obtain from Germany for export because arsenic, its component element, is used for numerous war-essential purposes.[3] There are no reports of shortages in Germany itself.

g. Agar-Agar. Agar-agar is a dried mucilaginous substance obtained from various species of seaweed. This material is of great value in laboratory work since it serves as a nutrient medium for the growth of bacteria. Before the war, Japan was almost the exclusive producer of agar-agar, the United States supplying 2 percent of world requirements. At present, production is carried on in the United States on a larger scale, in New Zealand and in England. Experts believe that climatic factors prevent its production on the continent of Europe. The European Axis is thus without supplies of agar-agar. Various substitutes have been developed, which, however, are not satisfactory in work with certain germs.[4] Agar-agar is washed and re-used to achieve economy, but this method is not satisfactory in certain respects. In Norway, the Fishery Experimental Station of Bergen is studying the utilization of seaweed, which is available in great quantities on the coast, and it is possible that technologies for the production of agar-agar may be developed in the course of these investigations.[5]

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1. Ministry of Economic Warfare, Weekly Propaganda Extract, #72 19 June 1943.

2. OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 65,87.

3. Ibid., P. 81.

4. W. Zimmermann, "Demonstration neuer Nährböden als Ersatz für Agar," Zentralbatt für Bakteriologie, Pt.1, 1939, Vol. 144, Supplement, pp. 65*-70*.

5. Europa-Kabel, 6 August 1943.

h. Insulin. Shortages of insulin are reported from virtually all European countries. Insulin is produced from animal pancreas which used to be imported in large amounts from South America. Insulin production requires enormous quantities of these glands. 80-100,000 animals supply 10,000 lbs. of glands, and these, in turn, suffice for the production of 1 lb. of insulin which is composed of 9,000,000 international units. United States monthly requirements, including exports, are 400,000,000 international units. During the earlier part of the war, Italy is reported to have been able to build up a stock of insulin of South American origin while the L.A.T.I. air line was still operating. This stock was apparently running low in 1943 and exports have been forbidden.[1]

The reports from the various countries which indicate shortages of drugs in many cases expressly refer to insulin. This is true of Rumania, Belgium, Bulgaria, France, Hungary, Switzerland, Germany, and the Netherlands. The actual or planned establishment of new productive facilities is reported from Italy (Biochemical Institute of Milan),[2] Bulgaria, and Hungary. Rationing of insulin is taking place in Rumania, Bulgaria, the Netherlands, and Germany. Difficulties in the treatment of diabetic persons are reported from France, the Netherlands and elsewhere.[3] The disease is often aggravated because of the food situation, which does not permit an adequate diet for diabetic persons or a diet which would offset the decline in insulin intake. In Germany, official thought pertaining to this situation is normally intermingled with considerations concerning the exploitation of the working power of diabetic persons.[4] An expert states that "All of us have experienced losses in weight during the course of the war, after we had experienced with rare exceptions, some overweight. Even if many persons have become somewhat subnormal in their weight, this in itself entails no great damage and will quickly be regained. Concerning diabetic persons: male diabetics who are employed have on the average a weight of 2,7 Kg. below normal. This is certainly not alarming. I mentioned before that diabetic persons are that group of the population which is in the most unfavorable position." The same author states that 91 percent of all male diabetics are employed and that 20 percent of these are heavy workers.[5] Another authority, a Viennese doctor, points out the following disadvantages of normal food rations for

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1. MEW, 48, 7 January 1943.

2. Medizinische Klinik, 5 June 1942, p. 549.

3. News from Belgium, 24 April 1943, p. 132; Universul, 28 March 1943; R. F. Minoli, "Food Rationing and Mortality in Paris, 1940-41," Milbank Memorial Fund Quarterly 20:213-20 (July 1942); Nachrichten für den Aussenhandel, 8 January 1943; Het Nationale Dagblad, 24 February 1943; Bulletin de l'ordre des pharmaciens, 7 March 1943; MEW, #61, 8 April 1943; OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 43, 65, 81.

4. K. Oberdisse and A. Fleckenstein, "Der Einfluss der Kriegsernährung auf den Diabetes mellitus," Deutsche medizinische Wochenschrift, 17 July 1942, pp. 717 ff.

5. Dr. Greiff, "Zuckerkrankheit und Arbeitseinsatz," Reichsarbeitsblatt, Pt. II, 5 November 1942, pp. 563 ff.

diabetics: normal food rations contain albumen principally in animal form; diabetic persons should receive it in vegetable form. The rations do not contain enough fat on the one hand and too many carbohydrates on the other. "A basic diet for diabetic persons can thus not be composed exclusively of the food rations. For this reason the diabetics receive additional food, which originally was quite ample but now has been reduced. It is apparent that the prescription of a diet encounters certain difficulties." In view of this situation, the expert recommends offsetting the food deficiency by increasing the insulin intake and by giving insulin to a larger number of patients.[1]

However, the supply situation has been such that the authorities had to take recourse to exactly opposite measures. Regulations were issued in the spring of 1942 for a sort of census of diabetic persons, with prescriptions of insulin centrally collected. This was done in order to ascertain requirements and to prevent people from obtaining more insulin by using the prescriptions of more than one physician. On the basis of this material, ration cards were issued.[2] The results of this investigation are described in the following circular of the Reich Health Leader, which was issued on 12 November 1942: "The insulin ration cards which have been issued on the basis of applications by physicians have resulted in a total demand for insulin essentially in excess of the previous consumption. Investigations indicate that insulin was requested in many cases for diabetics who do not require it and that higher amounts were prescribed than necessary. In order to meet the really essential need for insulin, it is necessary that doctors apply the same strict standard in their requests for new insulin cards as in prescribing additional food rations for sick people. The supply for diabetics is assured if all doctors impose upon themselves the necessary responsible limitation on insulin prescriptions." In prescribing insulin, doctors must apply the following principles: no insulin for light cases of diabetes; a reduced amount in other cases; no insulin for other dieases. Random investigations of the applications are made to assure that these principles are applied.[3]

Before the war, Denmark and the Netherlands were among the principal countries producing insulin. Some 90 percent of the Danish production used to be exported. Danish production of the Novo factory, which used to export to 45 countries in previous years, is reported to be hampered by lack of raw materials. The European market, on the other hand, has increased to such an extent that the demand cannot be met.[4] In the Netherlands, the Organon

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1. W. Falta, "Wie behandle ich die Zuckerkrankheit zeitgemäss?" Wiener klinische Wochenschrift, 20 February 1942, p. 152.

2. Klinische Wochenschrift, 30 May 1942, p. 512.

3. Reichsgesundheitsblatt, 13 January 1943, p. 14.

4. Berliner Börsenzeitung, 1 March 1943, Europa-Kabel, 27 August 1943.

factory was one of the world's largest producers of glandular preparations of all kinds. At least 80 percent of its pancreas used to be imported, in the main from South America and to some small extent from North America. In 1938, this factory took 285 tons of pancreas glands, which yielded roughly 3-400,000,000 international units of insulin. In 1939 and 1940 the facilities were enlarged and the present capacity may be 50-60 percent higher. The annual prewar consumption of insulin in the Netherlands has been estimated as 240,000,000 international units, to which Organon contributed 200,000,000 units. The rest was supplied by imports and one other small Dutch factory. Present minimum requirements for the Netherlands have been estimated as 12,000,000 international units per month as compared with 20,000,000 before the war. Dutch production is said to be only 6-7,000,000 per month. This corresponds to an estimated prewar production of 40 tons of glands or 60,000,000 units of insulin per year. According to one source, practically all of the insulin is produced by Organon. Other reports indicate a greatly increased production by Organon, but there is unanimity about lack of insulin in Holland proper. There is said to be no evidence of exports to Germany.[1]

It is not known to what extent the collection of pancreas glands in Europe is impeded by the consumption of the glands as food and to what extent it is organized for the purpose of insulin production. In Cracow, for example, the administration of the Government General has founded the Bacutil Corporation which is designed to function as a central agency for the marketing of animal by-products. This company is collecting and marketing the intestines, gall bladders, stomachs, and glands important for medical preparations, as well as other offal from the slaughter houses of the Government General. In Norway the Fishery Experimental Station of Bergen is investigating the possibility of obtaining insulin from the organs of the codfish.[2] The Bulgarian government now exports pancreas glands only to countries which are willing to supply insulin in return.[3] Preparations are also made for the domestic production of insulin by the Bulchina Corporation near Momina-Banja in the district of Ichtiman.[4] Rumania is engaged in similar efforts and has sent a deputation for the purchase of the equipment of an insulin factory in the Netherlands or in Denmark.[5]

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1. MEW, #61, 15 April 1943.

2. Europa-Kabel, 6 August 1943.

3. Zora, 5 January 1943.

4. Bukarester Tageblatt, 13 March 1943; Europa-Kabel, 6 August 1943.

5. Bukarester Tageblatt, 3 February; 6 June 1943.

i. Quinine. Quinine is the chief alkaloid of cinchona, the bark of the cinchona tree, which is cultivated in Java, India, Ceylon, and certain regions of South America. Before the war, more than 90 percent of quinine originated from trees grown in Java. The principal use of quinine is in the treatment of malaria. It is also applied in gynecology, as a prophylactic against grippe, as an analgetic, and in the treatment of general infections.

It is believed that Germany has obtained small amounts of quinine by blockade running during the war, though the quantity of these supplies is uncertain.[1] Total stocks in Axis Europe in May 1940 have been estimated as 275 tons of actual or extractable quinine salts. The pre-war requirements of this area were about 210 tons per annum including (or 190 tons per annum excluding) French North Africa. On this basis there was enough quinine in German Europe to supply needs for about 17 months, i.e., until the later part of 1941. The various campaigns in malarial districts have, however, placed the available supplies under much strain.[2]

The lack of quinine is not much felt in Germany, which is not malarial, but to a greater extent in Italy, Spain, Bulgaria, Yugoslavia, Greece, Turkey, and Portugal.[3] However, the production of synthetic anti-malarials like Atebrin and Plasmochin has made much headway in recent years. Since their production is concentrated in Germany, malarial countries in Europe are dependent upon exports from Germany. France and Italy are also producers of synthetic anti-malarials.

Atabrine[4] was originally a Bayer product. According to Professor Sergent of the North African Pasteur Institute, no French equivalent was available until Professor Roux, the director of the Paris Institute Pasteur, obtained the formula. The French product, an exact equivalent, is called Quinacine, and made by the Usines de Rhone. Another French malarial remedy, Stovaine, has been invented by Professor Fourneau. Professor Sergent has suggested obtaining quinine by cutting down trees after five years instead of removing the bark after 20 years.[5]

Atabrine is chiefly used as a remedy for malarial persons in Greece. The Red Cross had in April 1943 a supply of about 3.2 million atabrine tablets and 30 million more were ordered from Canada. For a treatment which, however, must be repeated often, 15 atabrine tablets are said to be needed. In order to make the campaign effective, 20 million additional tablets are reported to be needed. For the chronic cases about 2,000,000 plasmochin tablets are said to be needed, of which 300,000 were at hand in the spring of 1943. Moreover, quinine is necessary for special purposes. The Red Cross has about 300,000 quinine tablets.[6]

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1. MEW, 7 May 1943, P-79. MEW #87, 27 May 1943.

2. MEW, 17 March 1941.

3. Zora, 7, 18, March, 1943; Proinos Typos, 9 July 1942; OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 49, 68, 70, 74, 96.

4. See Dr. Rose, "Malariaprophylaxe mit Atebrin, ihre Dosierung und angeblichen Komplikationen," Deutsche medizinische Wochenschrift, 28 November 1941, p. 1307.

5. OSS, CID 41395, 6 May 1943.

6. From a report by Dr. Elsa Segerdahl Persson entitled "Contagious Diseases in Greece" and dated Athens, 28 April 1943. OSS, CID 38151.

In Germany herself, various economy measures have been applied which are designed to reduce the civilian consumption of quinine below normal. According to a decree of the Minister of the Interior of 13 March 1941, quinine and its compounds are dispensed only on a doctor's prescription. Doctors must not prescribe it as a prophylactic against grippe or as an analgetic. It is to be replaced by sulphonamides in the treatment of broncho-pneumonia, and by pyramidon in the treatment of general infections where it has sometimes been used to bring down temperature. Where necessary, it may still be prescribed in the treatment of malaria and in gynecology.[1]

The German position has undoubtedly been strengthened by the seizure of the considerable stocks which were available in the occupied countries, especially in the Netherlands. There are reports of German deliveries to Italy and Bulgaria, but other reports indicate the difficult supply situation in these countries.

j. Stimulants. i. Camphor. Natural camphor is obtained from the wood and bark of a tree growing chiefly in Japan and Formosa. Camphor is used as a liniment as well as a stimulant of the circulatory and respiratory systems. Though the continent of Europe is short of natural camphor, this deficiency is not serious in view of the limited usefulness of the product and in view of the fact that it can be produced synthetically. Shortages are reported from Holland and Belgium.

ii. Caffeine. Caffeine, another stimulant, is reported to be short in Estonia, where its content had to be decreased in certain medicinal preparations. It is also short in Holland and Hungary.[2] Reports from France indicate that synthetic caffeine can now be manufactured on a large scale after long laboratory research work. The price is much higher than genuine caffeine.[3]

k. Radium. About 85 percent of the world radium output is employed for medical purposes. The Belgian Congo provides 90 percent of the world supply of uranium, the ore from which radium is extracted. Extraction takes place in Canada and at Oolen, near Antwerp. The Belgian refinery fell into German hands in 1940. Though there have been no shipments of ore from the Belgian Congo, Germany is said to be in the possession of sufficient quantities of radium.[4]

l. Liver Extract. The value of a liver diet in the treatment of pernicious anemia was discovered only recently. The various liver extracts require extremely large numbers of animal livers and the supply situation in Europe is thus very

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1. Deutsche medizinische Wochenschrift 67:446 (18 April 1941); 13 November 1942, p. 1130; Klinische Wochenschrift, 7 March 1942, p. 240; 9 May 1942, p. 444; Reichsgesundheitsblatt, 16 December 1942.

2. Bern T. (P) #1698, 15 March 1943.

3. Le Petit Dauphinois, 11 August 1943.

4. Berliner Lokalanzeiger, 16 July 1942; News from Belgium, 7 August 1943.

similar to that in the case of insulin. In Germany, liver extracts used to be produced by I. G. Farben and much reliance was placed on liver imports from the Argentine. It is very difficult to replace these preparations, which might be more needed now than they were in the past owing to the various food deficiencies.

Since 1939, liver preparations have been available in Germany only on prescription.[1] In 1942 it was decreed that liver was no longer to be used for the manufacture of preparations to be taken orally but only for preparations for injections in the treatment of pernicious anemia.[2]

m. Surgical sutures.[3] Certain varieties of animal casings (fresh lamb casings, in particular) may be used for the production of catgut for surgical sutures. Although some kinds of fibers, particularly cotton, silk, and nylon, may also be used as sutures, those produced from natural casings have unmistakable advantages since animal casings are absorbed into the blood stream and there is a smaller chance of infection when such casings are used. Moreover, the use of substitute fibers requires a special technique on the part of the surgeon.

Germany has always been a large importer of casings. In 1938, for instance, German imports of animal casings totalled 19,311 metric tons, of which 3,317 tons came from Great Britain and Argentina. With the loss of imports from Russia, Great Britain, and, to some extent, from Argentina, and with the decline of livestock in many European countries, Turkish supplies have taken on greater significance than before the war. Orders were also placed with Swiss firms importing catgut and other raw materials for supplies to be used "supposedly for the production of strings for musical instruments."[4] At the Russian front in the winter of 1941, the Germans were using silk as well as catgut, but the quality of the latter was lower since it was not always of a uniform thickness or at a uniform tension.[5]

In view of the heavy German demand for lamb casings in Turkey, arrangements were made by the Allies for purchasing as much of the 1943 production as could be obtained. These arrangements were successful and by the end of September 1943, no type of lamb casing suitable for surgical sutures was available to the Axis.

German annual catgut requirements have been estimated as 200,000 Kg. In 1941 Germany imported 12,500 Kg. of dried raw catgut from Spain, which has an annual production of about 23,000 Kg. In 1942 exports to Germany rose to 13,400 Kg. During the same years Portugal imported 4,800 and 5,100 Kg., respectively, from Spain. It was believed that these imports would be shipped to Germany. In 1943 Portugal placed an embargo

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1. Bulletin of Hygiene 16:432 (1941).
2. Wiener medizinische Wochenschrift, 9 January 1943, p. 38.
3. BEW, Memorandum, 20 April 1943, B1-6-257.
4. OSS Sources, 8 March 1943.
5. OSS, CID, Censor Materials Summary 27, 1 May 1943, pp. 29, 43.

on the exportation of catgut, thereby depriving the enemy of an important source of supply.

Official Spanish figures for exports of silkworm gut are (in Kg.):

Country	1941	1942
Germany	0	384
France	265	1,373
Italy	76	84
United States	2,047	3,088
United Kingdom	957	1,254
Total	3,478	6,434

It is believed that German purchases, which were confined to surgical grades of silkworm gut, were in excess of the official figures. The 1942 Spanish production was estimated as 7,660 pounds and was said to be one of the lowest on record. Normal output averages 25,000 pounds, producing 90,000,000 of strands, of which 20 percent are suitable for surgical purposes. Germany normally bought 6 percent of Spanish production, concentrating on the finest surgical grades. Since the start of the war, German pruchases have trebled.

n. Opium. Goodman and Gilman, in their Pharmacological Basis of Therapeutics, aptly express the importance of opium as follows: "If it were necessary to restrict the choice of drugs to a very few, the great majority of physicians would place the opium alkaloids, particularly morphine, at the head of the list. Morphine is unequalled as an analgesic and its indispensable employment in medicine and surgery is well defined." Morphine is contained in raw opium in varying proportions, and although raw opium with a morphine content of less than 12 percent is not normally used in the manufacture of morphine, fluctuations of the morphine content must be taken into account in the evaluation of raw opium statistics. Morphine is not only produced from raw opium but also from poppy straw. The extraction of morphine from poppy straw is a comparatively recent development with possibilities limited only by necessary economies concerning land and labor.

Intercepted letters and related material occasionally indicate shortages of morphine and other opiates in Europe (Norway, Holland, France, Switzerland, etc.).[1] There is little such evidence from Germany proper, except a circular of 18 November 1942, which states that doses of codeine and ethylmorphine can not be sold more than once against the same prescription.[2] Official figures of Belgian and Danish stocks are slightly in excess of the stated requirements of these countries.[3] In June 1942, German field lazaretts had presumably

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1. OSS, CID, Censor Materials Summary 27,1 May 1943, pp. 81, 87; Journal of the American Medical Association 116:1470 (29 March 1941 118:1155 (28 March 1942).

2. Der oeffentliche Gesundheitsdienst, Pt. A, 1943, p. 154.

3. League of Nations, Estimated World Requirements of Dangerous Drugs in 1943, Supplement, 31 July 1943.

no restrictions on the use of anaesthetics. The use of narcotics is reported to have been prohibited in the treatment of Russian prisoners of war, while reportedly it is freely used for French and English prisoners. There is, however, a report indicating that opium derivatives could not be obtained by German field units in North Africa.[1]

The statistical evidence is rather ambiguous.[2] Axis stocks of opium on 1 January 1940 are generally estimated as between 270 and 277 tons. Subsequent production and imports during 1940, 1941 and 1942 are estimated as between 370 and 485 tons. The resulting total supplies in 1940-42 of 647 to 755 tons would have been absorbed by an Axis consumption in 1940-42 of from 536 to 600 tons. According to these estimates this would have left stocks amounting to 111 to 178 tons on 1 January 1943. In conjunction with imports estimated as between 45 and 58 tons, these stocks would have carried the Axis through the year 1943. This calculation of Axis supplies for 1943 is exclusive of 1943 European production, which will become available in the fall and early winter.

Apart from the production of synthetic substitutes for opium (demerol, dolantin, etc.), which has made much headway since the war, the production of morphine from poppy straw has grown in importance. Before the war, this process contributed the equivalent of at least 24 tons of opium in Europe per year. Extension of the acreage would make Axis Europe independent of opium imports from abroad, and there is little doubt that much has been done in this direction. As earlier experiments have shown, poppies can be grown as far north as Sweden and England. Before the war, the yield of poppy straw per acre varied between .75 and 1 tons. The yield of mophine per ton of poppy straw is 1 to 2 Kilograms. In the spring of 1943, Denmark started the cultivation of 120 acres.[3] According to Danish newspaper reports, domestic morphine requirements in Denmark could be met if about 1,500 acres of poppies were cultivated.[4] Slovakia harvested in 1942 7,000 acres or 2,150 tons of straw. Hungarian production rose in 1942 to 2,775 Kilograms or the equivalent of 20 to 30 tons of raw opium. This was produced from 1,600 tons of poppy straw, an amount which normally would not have been productive of so large a quantity of morphine. There has thus been a considerable improvement in the technique of production. Though more extensive information is lacking, there is little doubt that the Axis, if it so desires, can expand the production of poppy straw at will. The production of straw is considerably less labor-consuming than the production of raw opium, and progress has been made in the establishment of manufacturing plants for processing the straw and extracting the morphine.

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1. MEW #60, 12 April 1943, P-64.

2. BEW, Materials Inventory of the European Axis, 8 January 1943; Preclusive Purchase of Opium in Turkey, 18 February 1943; Memorandum dated 15 April 1943, B1-64-3A.

3. Wiener medizinische Wochenschrift, 6 February 1943, p. 114.

4. Politiken, 27 November 1942.

It is difficult to calculate Axis requirements under war conditions. In a report prepared by the International Narcotics Bureau it is estimated that Axis requirements during the war have increased from 50 to 100 percent and probably closer to 100 percent. Axis consumption before the war has been estimated as slightly in excess of 100 tons of raw opium. In spite of the increase in production from poppy straw, Germany has continued to press for the continuation of opium imports from Turkey and recent Turkish reports indicate that Turkey is not willing to reserve the whole of the 1943 crop for the Allies. Even though production from poppy straw has been expanded and can be increased still more, experts believe that Allied purchases of Turkish opium may be defensible in view of resulting dislocations in the Axis economy and in view of the postwar needs for opium.

APPENDIX I: INFANT MORTALITY RATES

The following table presents a compilation of infant mortality rates in various countries:)[1]

Year	Germany[a]	Protectorate Bohemia-Moravia	Italy	France[b]	Netherlands	Belgium
1938	62	c	106	66	37	73
1939	62	95	97	63	34	74
1940	65	94	103	91	40	85
1941	64	99	115	73	44	84
1942	70	98	c	70	40	84

a. Territory of 1937 including Austria, Sudeten districts, Danzig and Memel.

b. 1939 ff.: excluding Alsace-Lorraine.

c. Not available.

1 In the United States the infant mortality rate was 40 in 1942.

APPENDIX II: SOAP

The following table gives estimates of the pre-war consumption of soap and of the consumption in 1941 and 1942 in various European countries. Estimates are expressed in kilograms per person and per year.[1]

Country	Soap consumption Pre-war	Nov., 1941	April, 1942	Consumption of fat contained in soap Pre-war
United Kingdom	10.1	10.1	7.5	b
Germany	7.25	5.0 a	3.78	b
France	9.6	1.8	1.2	5.6
Italy	4.6	1.8	1.2	b
Spain	1.8	1.8	c	b
Poland	1.8	b	d	1.8
Hungary	2.6	2.0	d	b
Rumania	1.7	b	d	b
Belgium	11.5	2.5	e	4.6
Holland	10.7	4.0	1.8	4.5
Portugal	2.7	b	b	
Greece	1.6	b	f	2.5
Sweden	8.75	6.1	6.0	b
Switzerland	5.8	b	b	b
Denmark	10.6	2.25	e	b
Norway	6.6	b	1.8	4.0
Austria	5.1	b	b	b
Protectorate and Slovakia	4.25	b	d	2.6
Finland	3.4	2.0	1.5	b
Bulgaria	1.35	b	d	b
Yugoslavia	1.1	b	d	1.1

a. Rough estimate.

b. Not available.

c. Scarce.

d. Very scarce.

e. Official ration unchanged. Bad distribution.

In addition to the figures reproduced above and those given in the following pages, allowance must be made for home production of soap, which varies from country to country, and for which more exact data are not available. It is not believed that such production is of much importance in the urbanized parts of western Europe.

The soap shortage, the degree of which varies in different European countries, is a contributory cause of various diseases. It has contributed to the spread of lice and thus to the spread of typhus fever in regions which are normally not affected to any appreciable degree by this disease. Skin diseases as eczema, scabies, and impetigo have become widespread, especially among the lower-income groups.

1 MEW, 6 November 1942. The last column is from Inter-Allied Committee on Post-War Requirements, Report to Allied Governments, Appendix II, Allied Minimum Imports Programme, 1943, p. 27.

Soap is manufactured from fats and oils which are split into fatty acids and glycerine by the action of an alkali, usually lye of sodium or potassium. The latter combines with the fatty acids, which are the principal ingredients of soap, and frees the glycerine. The availability of soap is thus largely determined by available fat and oil supplies. In 1936 Germany used about 14 percent of her consumption of fats and oils for soap, compared with 20 percent in the United States in 1940.[1] In view of the German fat situation, it is thus understandable that soap should become scarce early in the war. The growing reliance upon domestic fats and oils was accompanied by the tendency to curtail the proportion of fats and oils used for soap production. As early as 1937 a leading German expert had stated in an address before the German Society for Fat Research that "present conditions require the allocation of all available fat for nutritional purposes. No edible fat for industry! Paint technology and soap manufacturing must look for a different raw-material basis."[2]

Before the outbreak of the war new technologies had been devised which were designed to reduce the consumption of fat for soap manufacturing or to produce economy in soap consumption, thereby reducing the consumption of fat. The fatty acids contained in soap are composed of groups of acids (COOH) which form lime salt, which in turn is not easily soluble. To reduce the concomitant loss of soap (fat), the I. G. Farben and the Boehme Corporation of Chemnitz have produced soaps (Igepon and Fewa) which do not contain the carboxyl group (COOH) but substances of the sulfo group (HSO_3). Igepal, another I. G. Farben product, does not contain any salt-forming groups (COOH or SO_3H) at all, but many hydroxyl groups (OH). Still other washing preparations are made from lignin-sulfon acids, a waste product of sulfite cellulose manufacturing plants. These preparations have, however, a very dark color. Much was made in Germany of the oxydation of paraffin to fatty acids for soap manufacturing purposes. This process, which in the last analysis produces soap from coal, had been studied by the I. G. Farben since 1921, and in 1928 a few tons of the product had been delivered to soap manufacturers for testing purposes. The results are said to have been excellent, but at that time foreign fat was available at prices which were low enough to prevent the utilization of the substitute product. The latter was not used until the introduction of the Four-Year Plan, which also promoted the production of liquid fuels from coal. Paraffin is a by-product of liquid fuel produced in this manner. Fatty acids are produced from paraffin by the Deutsche Fettsaeure Works in Witten, Ruhr, and the fatty acids are used in the soap production of the Maerkische Seifenindustrie. Production is said to consist of soft soap, laundry soap, soap powder, and some toilet soap. Pieces of the latter carry the inscription "Seife aus Kohle" (Soap from Coal). Such soap has been sold at retail since 1937. In 1942 it was reported that a new product, similar to Igepon, was manufactured by I. G. Farben from new sulphonate detergents made from brown coal. The name of the new product is Mersol.[3]

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1 Karl Brandt, Fats and Oils in the War, Stanford University, 1943, p. 3.

2 See Max Hessenland, Deutschlands Kampf um seine Rohstoffe, Munich, Lehmann, 1939, 3d ed., pp. 36 ff.

3 MEW #17, 6 April 1942.

Already included in products rationed under the circular of 29 August 1939, on "vital needs of the German people," soap was subject to a special order of the Fats Office of 26 October 1939.[1] This order introduced a soap card giving the right to one piece of soap and one packet of washing soda and 150 Gm. of soft soap or 100 Gm. of hard household soap per month; and one tube of shaving soap every four months. Children up to eight years were given an additional monthly allowance of 500 Gm. of soap powder or two packets of washing soda or 120 Gm. of soap flakes. Children under two years received, in addition, 100 Gm. of toilet soap. Persons suffering from skin diseases (confirmed by a medical certificate) and medical and nursing staffs could obtain a supplement of 500 Gm. of soap powder and 100 Gm. of toilet soap. In addition, persons engaged in dirty trades received a supplement of up to three pieces of soap monthly. While rations were subject only to slight modifications in the course of the subsequent years, the quality of the products deteriorated to a striking degree. The soap is said to consist of some sort of clay and barely lathers; other observers speak of "solid sand bars." The fat content of the household or toilet soap was reduced from 50 percent in 1941 to 18 percent in 1941-1942 and 12.5 percent in the early part of 1943, with a corresponding increase in the mineral content consisting of impure chalk, carbon dioxide, calcium oxide, alumina, silica and traces of magnesia.[2]

The extent to which the production of this soap of poor quality drains the German fat reserve is not easily determined in view of the uncertainty concerning the extent of the use of synthetic fats of the nature described above. Frequent examination of German soap samples have not revealed the use of synthetic fats in any appreciable number of cases. This has been ascribed to the German desire to economize in the production of liquid fuel by-products in order to maximize the production of the fuels themselves. On the other hand, uncorroborated reports from the summer of 1943 point out that Germany is now using synthetic fats successfully in soap manufacturing and that the new standard soap made from synthetic fats has a fat content of 78 percent.[3] In the summer of 1942 the production of fatty acids from paraffin was given as 60,000 tons.[4]

Based on official soap rations and the analyses of soap samples which have been undertaken abroad, the total fat needs for soap production have been estimated as 45,000 tons for 1942. Since rations have not changed, this estimate may well hold true also for 1943. It is based upon the following calculations:

Population	Soap product	Ration per person	Soap consumed	Fat content (tons)
80,000,000	Standard Soap	1.08 Kg.	86,400 tons (18% fat)	15,552
	" "Powder	2.70 Kg.	226,000 tons (13% fat)	29,320
			Total fat	44,872

1 Bulletin of Hygiene 16:432 (1941).

2 MEW, #31, 9 November 1942, etc.

3 AFHQ, Weekly Summary of World Events, No. 23, 002424.

4 MEW #121, June 1942.

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If to this are added the fat needs of the occupied territories, the total figure increases to 97,000 tons on the basis of an average ration of 1.5 Kg., a population of 196,000,000, an avera e fat content of soap estimated as 18 percent, and the resulting fat requirements of 52,264 tons. Much of the required 97,000 tons of fat for soap manufacture are provided by waste and fats recovered from oil and fat refineries and hardening plants, slaughter houses, restaurants, hotels, and even domestic drain water.

The general situation is most unfavorable to the maintenance of proper health and hygiene, the more so since hot water is rationed in numerous localities.[1] In the summer of 1942 the operations of commercial laundries were placed under considerable strain by a decree prohibiting the manufacture of machinery for making laundry soap and candles and cutting off the supplies of felt canvas and other textiles needed by laundries.[2] There is much complaint about the spread of skin diseases in Germany. Though the authorities are not inclined to state in plain words that the decline in the quantity and quality of soap must be held responsible for this, it goes without saying that the cure of such diseases becomes more difficult if the standards of hygiene decline. The "alarming increase" in eczema is ascribed in Germany to nervous disorders and allergies[3] and the growing number of cases of boils among miners is attributed, tentatively, to specific conditions of work, vitamin deficiencies and the like. It is pointed out that miners have shown less resistance to this disease than the rest of the population.[4]

In Denmark domestic soap production is reported to have increased in 1942 compared with 1941, since domestic oilseed crops could be utilized and regular soda imports from Germany were continued. However, the Copenhagen Municipal Hospital, which handles 80 percent of the cases of skin diseases among the population of the capital, treated 10,000 skin disease cases in 1942. Before the war only two cases of persons with body lice were treated annually, but during January 1943, 162 cases were treated.[5] In December 1942, two men were arrested in Copenhagen for having produced and sold about 500,000 so-called "shampoo powders" made from ordinary kitchen scrubbing powder, in some cases with the addition of some soap flakes. Analysis of the powders indicated that their application might cause eczema.[6]

In France the soap ration allowed was 3 ounces in May 1943, with a maximum fat content of 20 percent. There is much complaint of a shortage of caustic soda which is taken by Germany from France and reexported, in part, to Italy. Impetigo is said to prevail and cases of scabies to have increased many times. In 1941 a Paris hospital treated 60,567 scabies cases compared with a pre-war average of 4,500-5,000.

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1 Bern (P) #5209, 25 August 1943 (Munich).

2 MEW, 24 July 1942; 1 September 1942.

3 Karl Braun, "Ursachen der Hautfunktionsstörungen," Fette und Seifen, May 1942, pp. 359 ff.

4 Deutsche Bergwerkszeitung, 14 May 1943.

5 Fyns Tidende, 28 March 1943.

6 Politiken, 6 December 1942.

In Italy the shortage of soap is such as to yield reports normally incredible. An American citizen of Italian origin, who studied medicine in Naples, stated that "in the summer of 1942, students (subject included) of the surgical department of the university manufactured soap from fat obtained from cadavers at the morgue."[1] Italy relied upon German imports of caustic soda in 1942 and 1943.[2]

Stocks of this commodity have increased in Portugal owing to the lack of vegetable oils for soap manufacture.

Impetigo is said to prevail in Norway and the weekly cases of scabies in Oslo hospitals are now from 30 to 80 as compared with 0 before the war. For the whole country, the number of cases reported prior to the war varied between 450 in 1930 and 11,108 in 1939. During the first 10 months of 1942 a total of 26,574 cases was reported. Reports indicate that practically all German prisons and concentration camps are infested with scabies. The closing down of public baths in the cities aggravates the situation further, since hot water for bathing is no longer provided by apartment houses. In the city of Oslo all but one of the public baths were closed owing to the lack of fuel in the month of October 1942, and have been closed ever since.[3] Soap is so scarce in Norway that the patrons of barbershops must bring their own supply along.[4]

Recent reports from Turkey indicate that several small factories, encouraged by the Axis, are engaged in making soap from spoiled hazelnuts. In the summer of 1943, 140,000 Kilogram of soap of excellent quality was said to be available for export to the Axis. The Allies have considered preclusive purchase of these stocks.

A recent report from Hungary indicates that the discovery of earth saturated with oil in Transylvania has given rise to the production of a soap substitute called Montmarillonit. This is said to be sold everywhere for a price somewhat less than regular soap. Allegedly it is almost as good as the natural product. In the process of production the oily earth is dried, ground and cleaned. It is then scented with perfume. Germany has shown great interest in the product and a German export concern was established in Budapest.[5]

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1 OSS, Survey of Foreign Experts, CID 00535, 30 June 1943.

2 MEW, Intelligence Weekly, 15 April 1943.

3 Office of the Surgeon General of the Norwegian Public Health Service, Medical and Sanitary Data on Norway, Washington, D. C., May 1943, CID 33847, pp. 34 f.

4 Sydsvenska, 4 August 1943.

5 OSS, CID 42939, 12 September 1943.

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